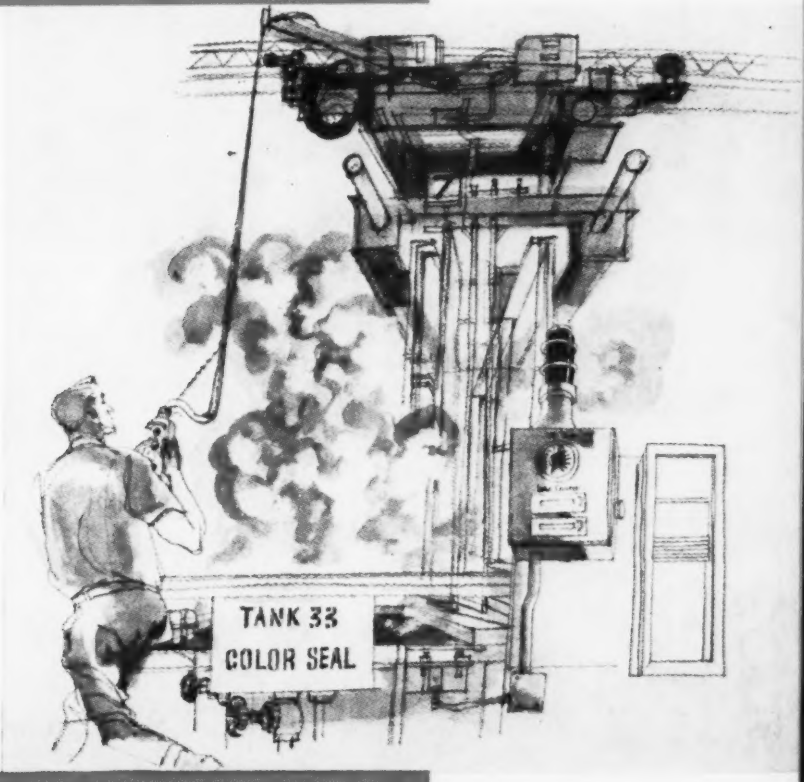
products finishing

JANUARY
1959

Four
Steps
to
Successful
Anodizing
Page 38



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finishes on metal products

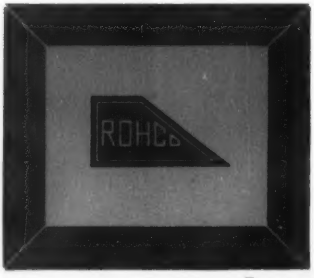
Take a buyer's critical look at your zinc plating. Does it have the sparkle and brilliance that reflect its real quality? A high-grade finish may well provide the competitive edge which keeps your customers satisfied.

Leading manufacturers of everything from TV antennas to nuts and bolts have found these ROHCO® Zinc Brighteners provide the superior finish they are looking for:

ROHCO 503 STILL AND AUTOMATIC ZINC BRIGHTENER
ROHCO 100 BARREL ZINC BRIGHTENER
ROHCO 175 BARREL ZINC BRIGHTENER

The cost? Insignificant! Studies have shown that the difference between an ordinary finish and a full-bright ROHCO finish amounts to *less than ½% of plating costs!*

Your customers will appreciate seeing how ROHCO full-bright zinc can help sell their products. Show them. A nearby ROHCO Technical Representative will be pleased to help you improve your zinc plating, without obligation. Write us.



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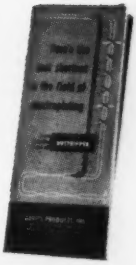
HAVE YOU TRIED THIS EXTRAORDINARY CLEANER?

Oakite Rustripper removes rust and heat scale in the same operation that removes oil. It avoids hydrogen embrittlement, damage to machined surfaces and other disadvantages of acid pickling.



Have you taken the four good steps?

How can cleaning costs be reduced 33% while cleaning quality is being improved?
See pages 7 and 8 of booklet.

What are four easy ways to improve the average rinse tank? *See page 10.*

What causes hydrogen embrittlement during electrocleaning? What is the remedy?
See pages 15 and 16.

Do you need a brass cleaner that gives better protection against tarnishing?

Oakite has a new brass cleaner that provides scientific protection against the oxygen that tarnishes brass and other copper alloys during the application of reverse current.

OAKITE PRODUCTS, INC.
20 Rector Street, New York 6, N. Y.
Send me the FREE booklets indicated below:

- ☐ Here's the best shortcut in the field of electroplating
- ☐ Four good steps toward better electroplating on steel
- ☐ What's NEW for electrocleaning brass and other copper alloys

NAME_____

COMPANY_____

ADDRESS_____

FREE
For further information, ask for booklet

OAKITE

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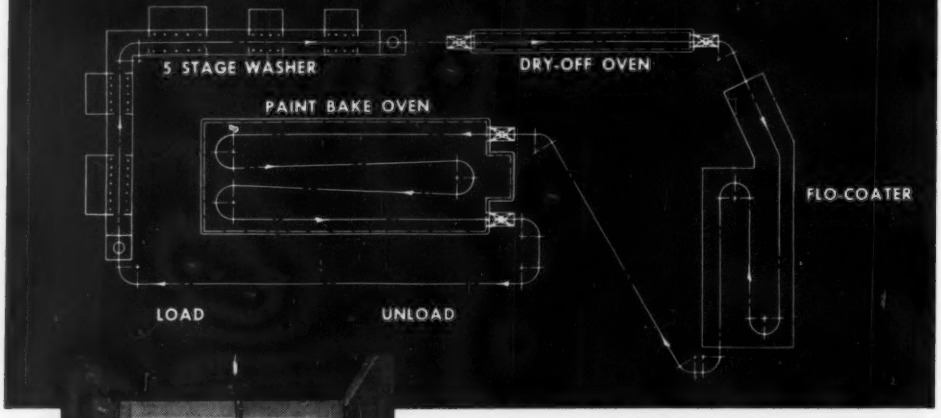
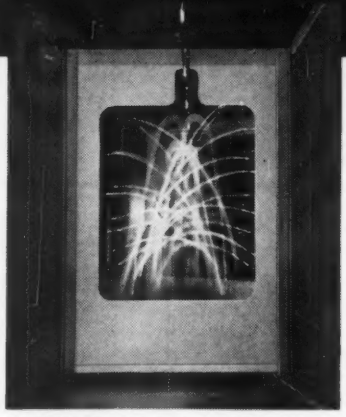
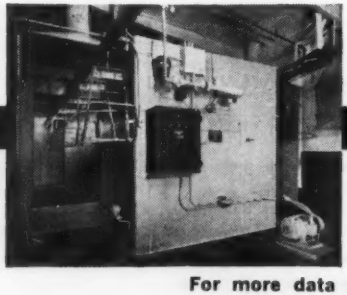
INTEGRATED





Unique lacquer Flo-Coater has wide flare and long flow path to suit the product—supermarket shopping carts and baskets. Compact MOCO installation gives substantial savings in coating materials over other systems.

Air-jet "curtains" at entrance and exit of MOCO baking oven act as a barrier against heat loss. The system is fully equipped with electronic flame failure safeguards.



Finishing Systems– *Cost Controlled* for Modern Production

Integrated Finishing Systems are more than just a plan and installation designed to meet the customer's needs in materials, space and output. At Michigan Oven, engineering a cost-controlled finishing system means equipping for today's demands, and for tomorrow's production.

The lacquer Flo-Coating system illustrated above is a complete and efficient system. Behind its installation lies a thorough study of the plant, of the product, of quality control and initial investment.

This finishing system will pay for itself in a relatively short time. It's engineered for economy, low maintenance and safety—and it will adapt readily to future expansion at low cost.

Send for a free MOCO bulletin showing typical finishing system applications, including products, process and specifications, or write for the name of the MOCO representative nearest you.

MICHIGAN OVEN COMPANY

MOCO

FINISHING EQUIPMENT DEPARTMENT
431 BRAINARD, DETROIT 1, MICHIGAN

Washing Machines • Bonderizing Units • Dry-off Ovens • Dip Tanks
• Spray Booths • Flo-coaters • Finishing Ovens • Conveyors

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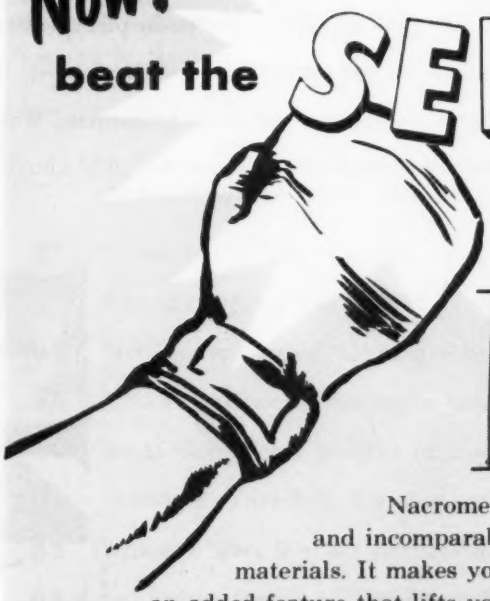
Now! beat the SELL out of competition with Nacromer®

SYNTHETIC PEARL ESSENCE



Nacromer adds unusual new life and incomparable brilliance to most coating materials. It makes your finish something to sell on . . . an added feature that lifts you above competition.

You can do all of this without extra finishing equipment by incorporating Nacromer into your coating material and applying by your usual method. It can be applied to wood, metal, plastic, paper, leather and many other materials.

Sound simple? It is! Use the coupon below to get complete facts as well as a generous working sample.

mail this coupon **TODAY!**

You will quickly receive complete information and a generous working sample of Nacromer.

THE MEARL CORP., 124 EAST 40th ST., NEW YORK 16, N. Y.

OUR COATING VEHICLE IS .....

WE COAT .....
(INSERT TYPE OF MATERIAL HERE)

NAME ..... TITLE .....

COMPANY .....

ADDRESS .....

CITY ..... ZONE ..... STATE .....

THE MEARL CORPORATION, 124 EAST 40th ST., N. Y. 16, N. Y.

world's leading producers of pearl essence

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How to make plating upon aluminum an exact science: For many years, hundreds of manufacturers have been using Alumon,® an Enthone process, to prepare aluminum alloys for electroplating. Enthone chemists work out the plating cycles, give in-the-plant assistance. Alumon is an easy process to use and it costs less than ½¢ per square foot of surface plated! Write for literature about this economical and efficient process. Also find out about Etchalume,® Weldal,® and other specialized Enthone compounds for finishing aluminum. Enthone, Inc., 442 Elm Street, New Haven 11, Connecticut.

ENTHONE

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products finishing

Vol. 23 No. 4 January, 1959

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Metal Finishing Suppliers Association Inc.

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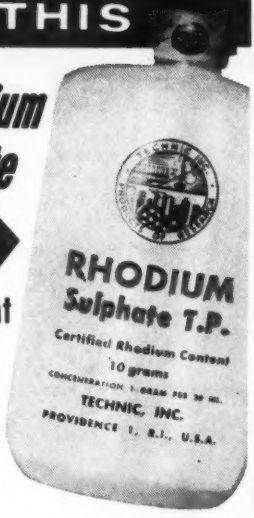
NEW Rhodium Concentrate

an improvement by TECHNIC



Technic developed this superior Rhodium concentrate to meet today's electroplating specifications with —

✻LOWER STRESS
✻HIGHER PURITY
✻FINER GRAIN

Testing is easy because of high compatibility with existing Rhodium baths. Ask for complete data on characteristics and applications.

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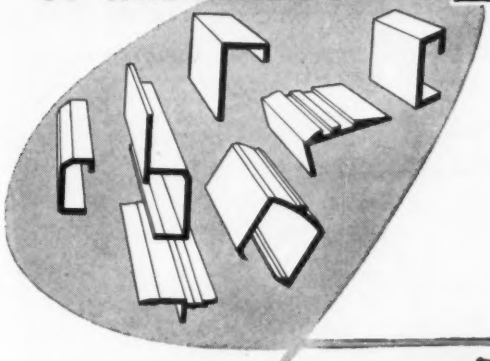
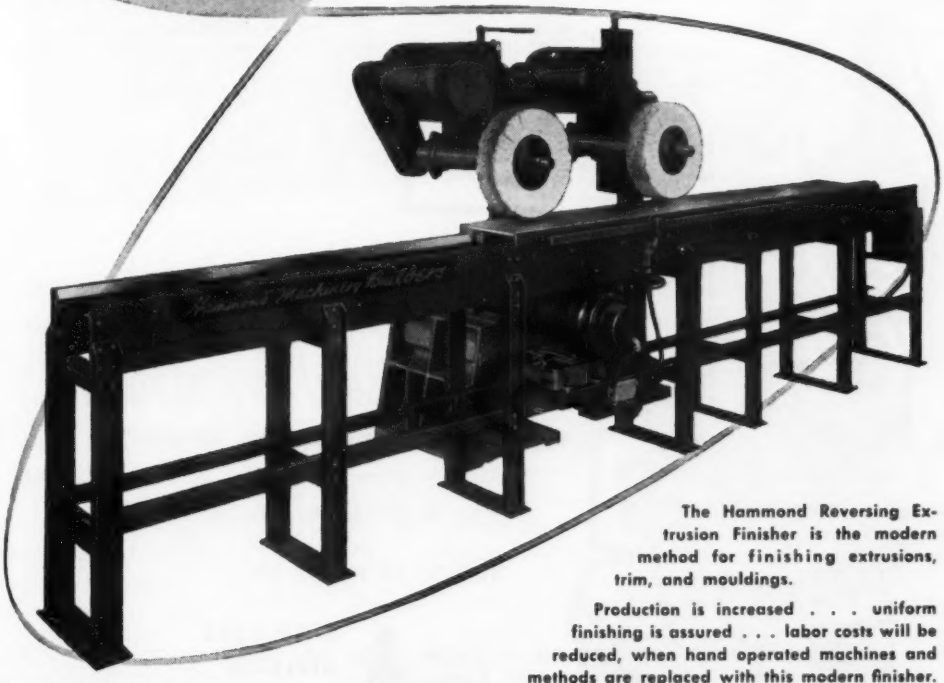
Hammond
OF KALAMAZOO

REVERSING EXTRUSION FINISHER

for LOW COST, VOLUME PRODUCTION FINISHING OF EXTRUSIONS, TRIM AND MOULDINGS





The Hammond Reversing Extrusion Finisher is the modern method for finishing extrusions, trim, and mouldings.

Production is increased . . . uniform finishing is assured . . . labor costs will be reduced, when hand operated machines and methods are replaced with this modern finisher.

Two-Head Machine shown . . . any number of heads, and length of conveyor, can be supplied to suit your job.

SEND SAMPLES and we will show you how much you can speed up production and cut costs.

Hammond Machinery Builders INC.

1622 DOUGLAS AVE. • KALAMAZOO, MICHIGAN

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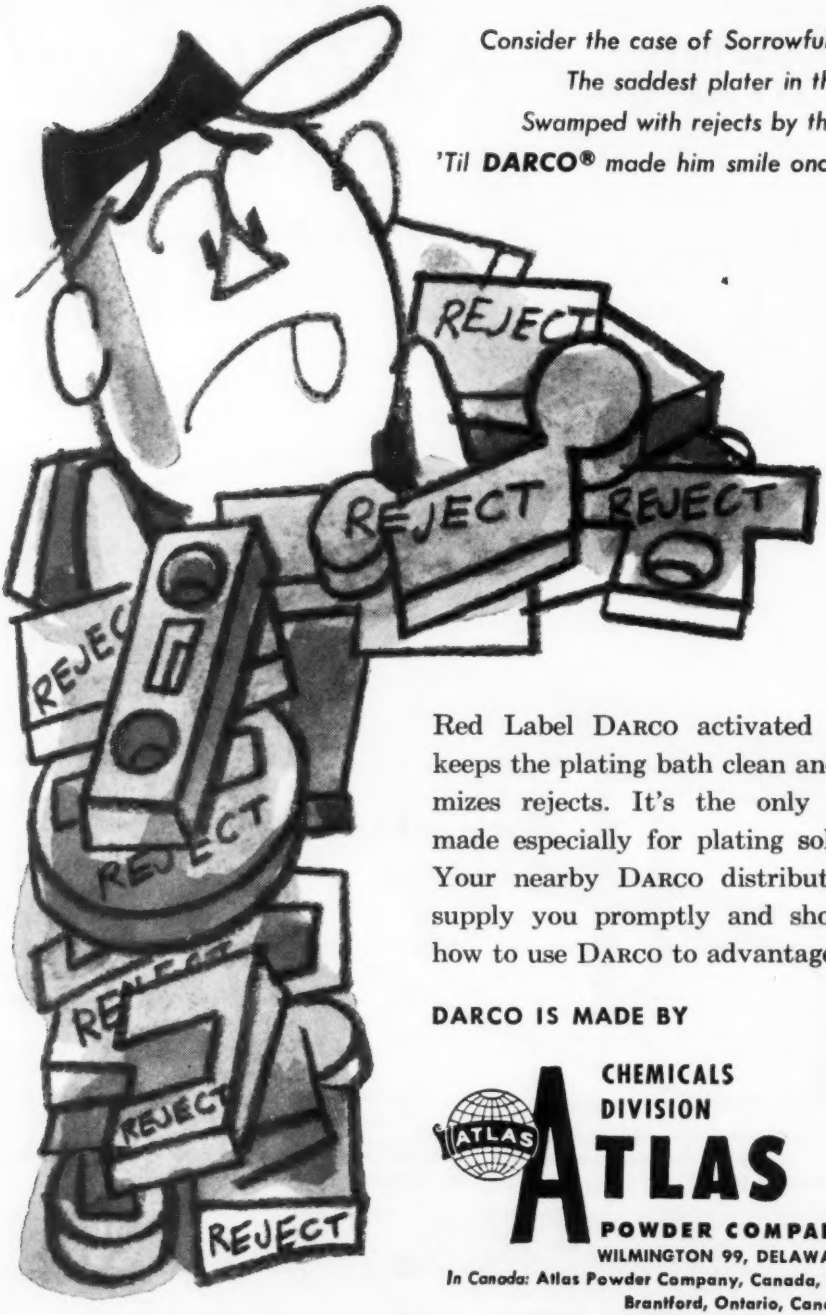

Consider the case of Sorrowful Brown,
The saddest plater in the town.
Swamped with rejects by the score,
'Til **DARCO®** *made him smile once more.*

Red Label DARCO activated carbon keeps the plating bath clean and minimizes rejects. It's the only carbon made especially for plating solutions. Your nearby DARCO distributor can supply you promptly and show you how to use DARCO to advantage.

DARCO IS MADE BY

CHEMICALS DIVISION
ATLAS POWDER COMPANY
WILMINGTON 99, DELAWARE
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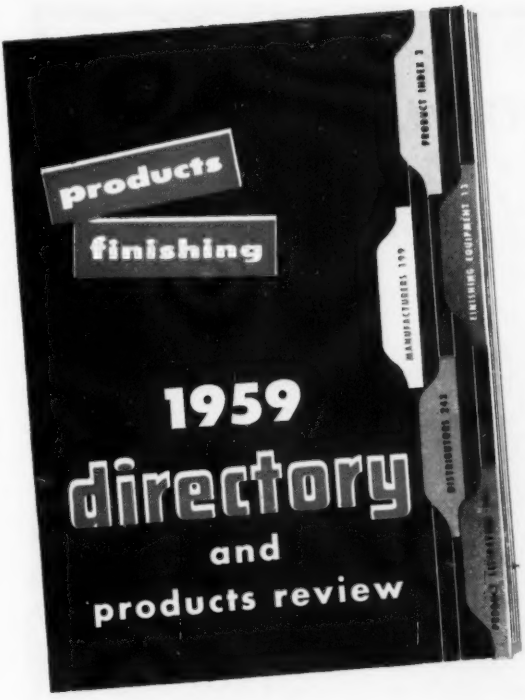

YOUR EVER-PRESENT SALESMAN

Sitting next to every one of your prospects, every day, is an impossible task. Next best thing to a live salesman is the "live" influence of the Products Finishing DIRECTORY to help prospects select your products and services.

21,000 CIRCULATION GUARANTEED

LARGEST CIRCULATION IN THE FINISHING FIELD

at the LOWEST COST PER THOUSAND $10.07

Space used in the 1959 DIRECTORY earns an attractive rate when combined with space in PRODUCTS FINISHING . . . together the "hottest sales team in the finishes-on-metal industry".

WRITE FOR NEW, DETAILED NIAA MEDIA FORM

Closing Date February 15, 1959 . . . Order Space Now!

PRODUCTS FINISHING DIRECTORY

431 MAIN STREET • CINCINNATI 2, OHIO

Once you use it you'll Order... Again... and Again... and Again!

Every can filled with a full weight of extra high quality 99.75+% Chromic Acid. Prompt delivery made from ample factory and nearby distributor stocks.

PAINTS · PLASTICS · CHEMICALS — BFC

BETTER FINISHES & COATINGS, INC.

268 Doremus Avenue, Newark 5, N. J. • 2014 East 15th St., Los Angeles 21, Calif.

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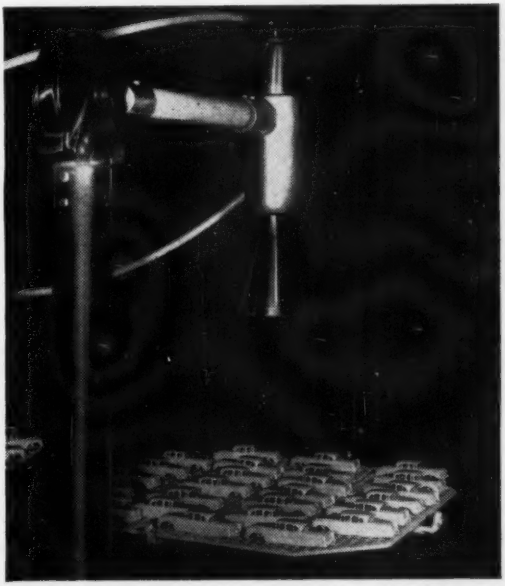
tootsietoys

are painted by the millions with

RANSBURG NO. 2 PROCESS



Miniature automobile bodies of the tootsietoy line are efficiently and uniformly painted as trays of cars pass below one of the four Ransburg No. 2 Process atomizing bells.

QUALITY OF THE FINISH IS IMPROVED AND PAINT COSTS ARE CUT 65% WITH *Electrostatic Spray Painting*

Dowst Manufacturing Co., Chicago, are sticklers for quality in the production of tootsietoys which are turned out at the rate of 25 million a year. That's one reason they changed from hand spray to Ransburg Electrostatic Spray Painting.

RESULTS? Rejects are cut from as much as 5% to about 1%, for they're getting a more uniform, higher quality coating on all parts. Colors are changed easily, and paint mileage is stepped up substantially. For instance, on one toy item, a gallon of paint coated only 1800 units by hand spray. Now, with Ransburg No. 2 Process, they paint 5500 pieces per gallon. That's because of the unmatched efficiency of Ransburg No. 2 Process.

NO REASON WHY YOU CAN'T DO IT TOO!

Whatever your product—whether it's large or small—we'd like to show you what RANSBURG ELECTROSTATIC PROCESSES can do for you in YOUR finishing department. Write for our No. 2 Process brochure which shows numerous production line examples of electrostatic spray painting on a wide variety of products.

Call or write | **RANSBURG Electro-Coating Corp.**

P. O. Box 7822 • Indianapolis 23, Indiana

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TYPE AGA
SERIES NO

Choose DeVilbiss automatic spray...for control and uniformity not possible by other methods!

If the success of your finish depends on "controlled application"—the application of exact amounts of material, evenly, over specific areas—it's time you investigated the DeVilbiss automatic spray method.

With "controlled application" by DeVilbiss automatic spray, gun positions and angles are precisely set and timed to the split second to eliminate variations in film thickness, color, luster, and texture. Unlike manual methods, material use is constant, production rates uniform. What's more, with DeVilbiss automatic spray you have the *best* method of spraying inside deep cavities as well as uniformly coating exterior surfaces.

And here's how you can know in advance, without charge or obligation, the exact economies of automatic spray. We will simulate your operation in our fully equipped DeVilbiss research laboratory. Your supervisors are invited to be there. The results are passed along to you. Write us for details, or talk to your DeVilbiss representative.

THE DEVILBISS COMPANY
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São Paulo, Brazil
Branch offices in principal cities

FOR BETTER SERVICE, BUY
DEVILBISS

DUST COLLECTORS • INDUSTRIAL POWER WASHERS • FLOW & DIP COATERS
OVENS • SPRAY BOOTHS • AIR COMPRESSORS
SPRAY EQUIPMENT • HOSE & CONNECTIONS • MIST COOLANT UNITS

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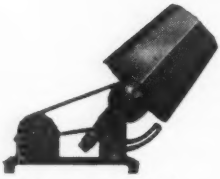
INVESTIGATE THIS TIME-SAVING

VARIABLE SPEED MODEL

BENCH MODEL VARIABLE SPEED



Bench-Type Single Speed

No. 5—Single Speed

No. 5A—Single Speed

No. 6—Single Speed

Note Carefully These IMPORTANT POINTS

Barrels can be filled with parts or abrasive—*while running.*

Work can be watched — samples removed for inspection — *while running.*

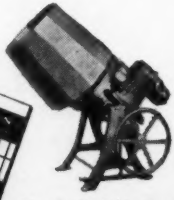
Angle can be changed for best abrasive or polishing action — *while running.*

Barrels can be emptied by tilting to pouring position — *while running.*

Barrels are made in various sizes, shapes, and materials. They are easily replaced.

No. 5—Variable Speed

No. 5A—Variable Speed



No. 6—Variable Speed

If You're a Tumbler, Send for This NEW CATALOG

THE HENDERSON BROS. COMPANY

"The Tumbling Barrel People"

138 SOUTH LEONARD STREET
WATERBURY, CONNECTICUT

SINCE 1880 DESIGNERS AND BUILDERS OF TUMBLING BARREL EQUIPMENT

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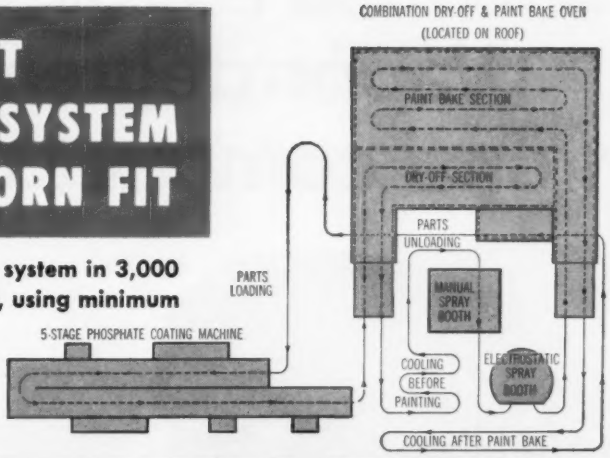
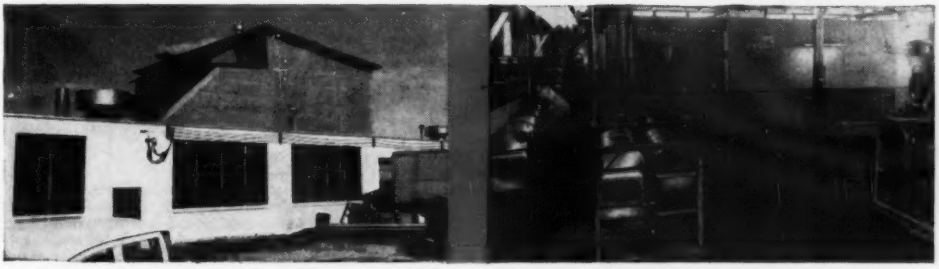
BIG OUTPUT FINISHING SYSTEM with a SHOEHORN FIT

. . . Ransohoff complete system in 3,000 sq. ft. triples production, using minimum paint, rework zero





Single unit heats combination oven, with separate dry-off and paint bake sections, on roof. Low fuel cost despite near-arctic winters.

Loading metal chairs on conveyor to 5-stage phosphate-coating machine. Sections are built back to back to conserve space.

The challenge at Krueger Metal Products, Green Bay, Wisconsin, would have baffled any but the top brains in the business. The situation: A one-floor plant with ceiling too low for overhead cool-off. Only 3,000 sq. ft. of floor area, studded with posts, requiring oven on roof. Roof not strong enough to support oven. Outside temperature of 10° for several months with heavy snow-load.

True to their tradition since 1916, the Ransohoff team came up with a complete, amazingly efficient system sandwiched into 3,000 sq. ft. including loading, unloading, and two cooling areas. And is their system performing? See what Mr. C. E. Saunders, Krueger's General Superintendent, has to say:

"Our new Ransohoff finishing system has tripled our production, limited only by the ability of our operators to hang and take chairs off. Whereas we formerly had difficulty in getting an even finish without considerable rework, our touch-up is now virtually zero. Our finish is evenly applied using a minimum of paint. Temperature recording charts show a variation of only ± 2° in our oven. Even on zero degree days, the roof oven heats up quickly to required temperature, while the entire system uses minimum fuel".

Write **RANSOHOFF, INC., 610 N. Fifth St., Hamilton, Ohio,** *for an answer to your problem. Send parts for test-processing, if you wish. No obligation.*

Ransohoff *The oldest name... the newest ideas*

Designers and Builders of Equipment for the Surface Treatment of Metals

• Washing • Rinsing • Burnishing • Rustproofing • Sawdust Polishing and Drying • De-Scaling • De-Burring • Drying • Pickling • Complete Finishing Systems • Foundry Wet Cleaning Mills • Ultrasonic Cleaning

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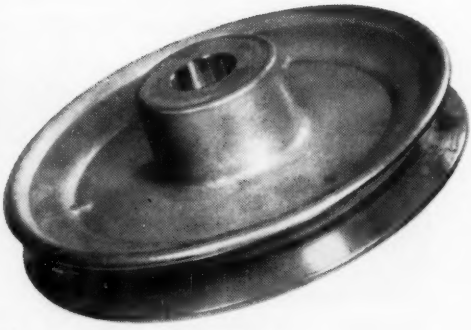
A new process from Du Pont . . .

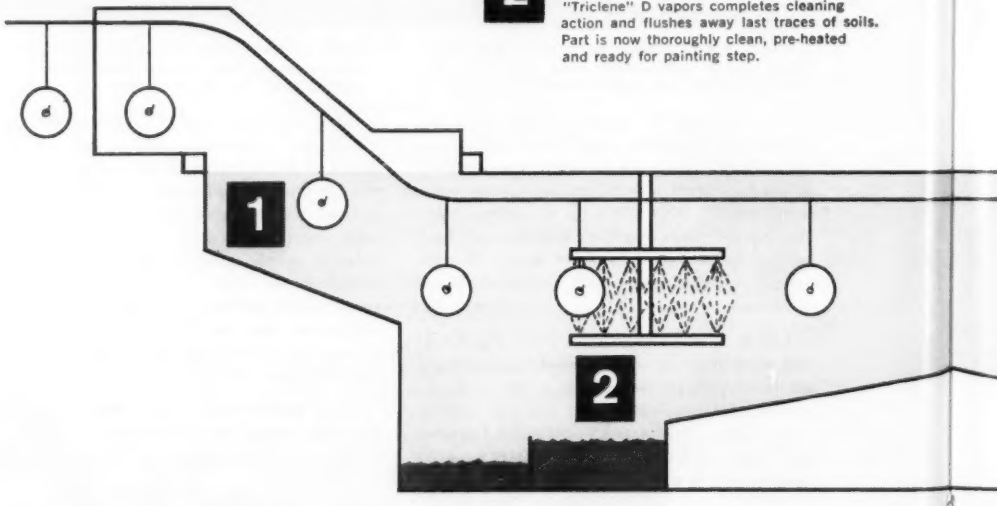
Vapor degreasing and in one compact unit—with



HOW IT WORKS

1 Greasy and soiled pulley wheel (above) enters degreasing section of unit (No. 1 below) after prior fabricating steps. Cleaning action begins as "Triclene" D trichlorethylene vapors condense on cold part.

2 Mechanical action of spray rinse (No. 2 below) accelerates cleaning. A final rinse in pure "Triclene" D vapors completes cleaning action and flushes away last traces of soils. Part is now thoroughly clean, pre-heated and ready for painting step.



Here are the advantages . . .

SAFE: New process uses paints thinned with nonflammable "Triclene" D solvent. Fire and explosion hazard virtually eliminated!

CUTS COSTS: Solvent, overspray and excess paint are fully recovered—drip loss is eliminated. Integrated cleaning and painting with "Triclene" D trichlorethylene cuts labor and utility costs.

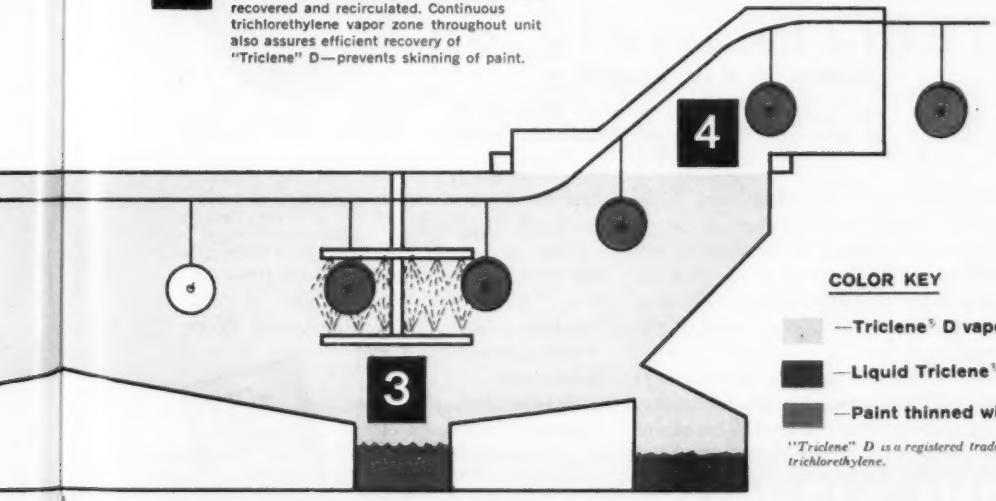
ONE COMPACT UNIT: Simplified equipment saves floor space and reduces finishing time. Unit can be easily adapted to fit in with other production steps both before and after cleaning/painting.

LOW INVESTMENT: No drip pans or spray booths needed. Drying ovens can be eliminated or requirements minimized.

nonflammable painting
Triclene® D trichlorethylene

4 When lacquer type paints are used, parts emerge from unit (No. 4 below) completely dry and ready for final assembly or packaging. Where curing paints are used, baking can be attained with minimum time and equipment requirements.

3 Nonflammable paint thinned with "Triclene" D is "flowed" on the part (No. 3 below). Overspray and excess paint are recovered and recirculated. Continuous trichlorethylene vapor zone throughout unit also assures efficient recovery of "Triclene" D—prevents skinning of paint.



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Du Pont has prepared a Technical Report describing its new process for integrated cleaning and painting. Included are cost comparisons to help you determine probable cost savings. Get a copy of this Report from your Du Pont representative or your distributor of "Triclene" D trichlorethylene. You can also write to Du Pont, Electrochemicals Dept., Wilmington, Del.

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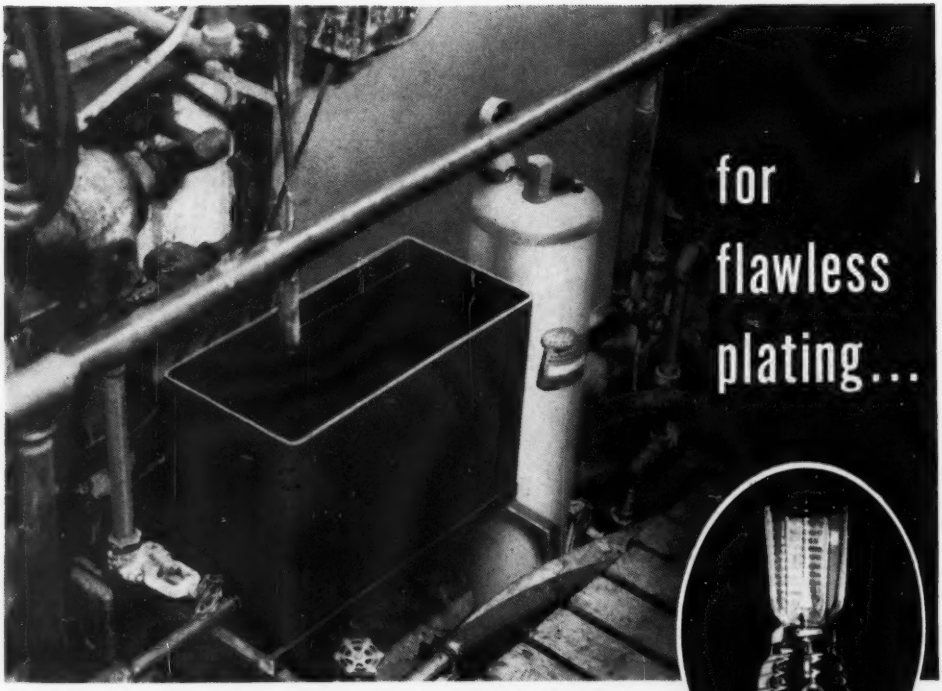

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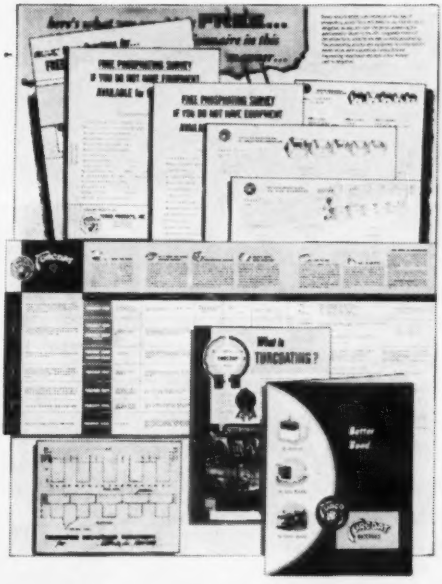

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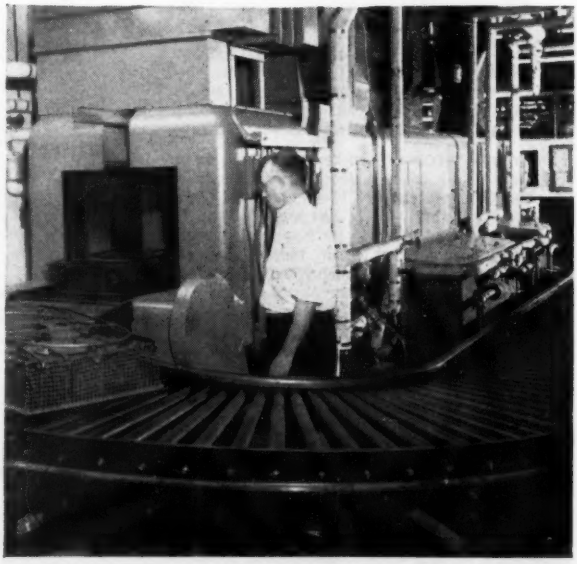

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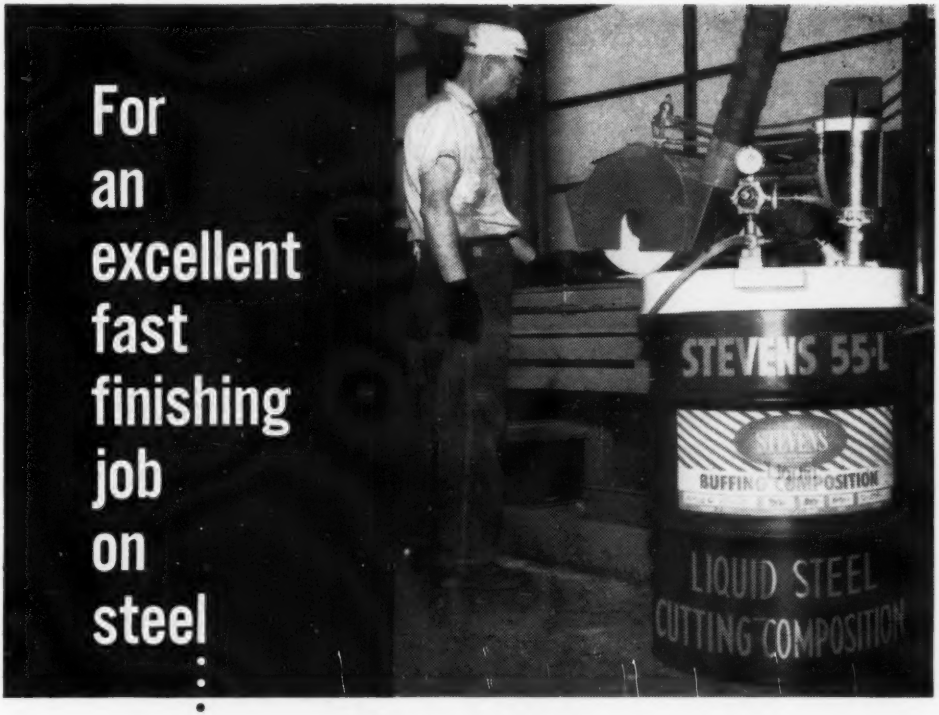

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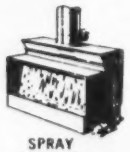
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editorial

Finishes Can Be Sold!

Some manufacturers seem to regard the finish on a product as a necessary evil—a part of the product that you have to have, that must be as good as the competitor's; but a feature that need not be stressed in selling the porduct.

Two of the biggest users of finishes are proving this isn't true. Car makers this year are advertising their new lacquers and enamels that require no elbow grease for wax jobs during the first three years or so. Appliance manufacturers are selling their porcelain enameled washer tubs, telling people that they'll *take* the soap and abuse that the housewife gives them.

Every manufacturer who applies a finish to his product should take note. Here is something that requires a lot of money and time to develop and supply. Many chemists, engineers and production workers have spent years to make it a better finish than that used on last year's model. If it isn't a better finish, it should be, for the techniques and materials to make it better are available. Why not sell the improvements?

Every finisher today has something to talk about. The electroplates today are better than they were ten years ago. The chromium-plated part of today is vastly better than its nickel-starved counterpart of six years ago. Its crack-free structure is a big improvement. But does the consumer know it? Probably not. He thinks that "they aren't as good as before the war." The same is true of the copper plates, the gold plates, the alloy plates—almost any plate. Why not take the story to the consumer?

Anodizers have improved dyes. The vacuum metallizer has a more durable coating than he had even two years ago. He can tell the consumer that the bright finish is vacuum-plated, and that its attractive appearance is preserved by tough lacquers. We could go on citing improvements. . . .

But the point is that almost every type of finish has been improved a great deal in recent years. Telling people that the finishes are better will help sell the product and help sell finishes, too.

That kind of selling helps "spread the word" about finishes, and promotes the best interests of the entire finishing industry.

Gerard H. Poll, Jr.

—ASSOCIATE EDITOR

Automatic Finishing System: Careful Planning Pays

By **CHARLES E. SAUNDERS**
General Superintendent
Krueger Metal Products Company
Green Bay, Wisconsin

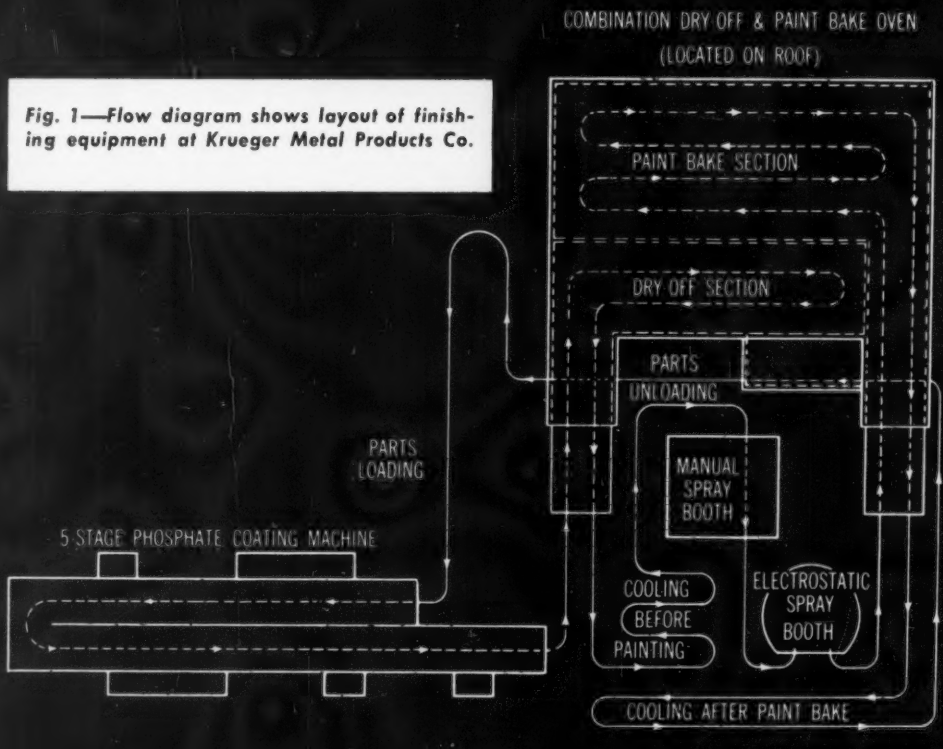


Fig. 1—Flow diagram shows layout of finishing equipment at Krueger Metal Products Co.

The engineering details of an integrated system designed to overcome obstacles in an existing building . . .

Layout and equipment design are important fundamental considerations in planning any paint finishing system. It usually takes a lot of engineering ingenuity to come up with equipment that fits the space and yet produces a quality finish quickly and economically.

Engineers have to consider size of equipment and its placement in relation to other equipment and facilities. Washing and treating machines should be close to loading stations and dry-off ovens; they should be large enough to allow sufficient space for thorough cleaning and phosphatizing. Spray booths and ovens should be close to one another and placed so that excessive duct work is not required for exhaust and makeup air. And general material flow must be considered so that loading and unloading can be done close to freight docks and assembly and packing rooms.

These problems are not easy to solve even when the engineers start with a piece of paper and design a paint finishing system for a new building. The problems become even more complex when a new system must be worked into an existing building that has certain irrevocable limitations.

Such was the situation at our plant — Krueger Metal Products

Krueger Metal Products makes metal chairs and tables. Several models are shown here. →

Company, Green Bay, Wisconsin—where we manufacture metal folding chairs, school desks, and folding tables. The area allotted for the new finishing system was limited. Expansion was impossible — a rail siding is on one side of the building and a new highway on the other side. The existing building, a "one-floor plan," consisted of less than 3,000 square feet of floor area chopped up by supporting posts and squeezed by a low ceiling. And if the engineers had any time left for problem solving, they could spend it thinking of a way to build a baking oven that could be heated easily on Green Bay's zero days without consuming excessive fuel.

The system recently installed (Fig. 1) is carefully planned, successfully overcomes the obstacles. It has tripled plant capacity, will finish 2,400 chairs per eight-hour day and has reduced rework.

The new conveyorized finishing installation includes a five-stage washing and phosphatizing machine; an oven with two sections: one for drying parts after washing, and one for baking painted parts; a water-wash manual spray booth; and electrostatic spray equipment.

All components with the exception of the electrostatic spray equipment and the water-wash spray booth were designed and fabricated by Ransohoff, Inc., Hamilton, Ohio. The entire system was installed by Krueger Metal Products personnel under the supervision of Ransohoff engineers.

Conveying System

Parts are carried through the finishing process on a chain-type conveyor 808 feet long at a speed of

Fig. 2—Loading metal chairs on the finishing conveyor. Five-stage washer is in background.

10 feet per minute. The chain is supported by trolleys spaced 24 inches apart. Trolleys ride on a three-inch I-beam. Parts soiled with drawing compounds, oils, greases and other "dirts" that accumulate during fabrication are loaded on the conveyor as it runs through a separate loading area. Once loaded, parts remain on the conveyor until completely processed — cleaned, painted, baked and cooled.

Cleaning and Phosphatizing

Cleaning and phosphatizing, the first steps in the process, take place in a five-stage U-shaped, enclosed tunnel-type machine (Fig. 2), which is built with a common center partition to save space and limit heat loss from the solutions.

The entire cleaning machine is 100 feet long, including both sides of the "U." Overall height is 10 feet, and overall width, 13 feet. The tunnel interior measures 36 by 55 inches.

Lengths of individual sections of the machine are as follows: entrance, five feet; hot alkali clean, 15 feet; drain, eight feet; hot-water rinse, five feet; drain, 16 feet (includes 180-degree turn formed by the "U"); phosphatize, 15 feet; drain, eight feet; cold-water rinse, five feet; drain, eight feet; hot-chromic rinse, five feet; exit and air blow-off, five feet.

All solutions are sprayed on the parts by V-jet and deflector-type nozzles positioned to spray all sides of every part.

Solutions are pumped through the nozzles and circulated by Ransohoff vertical immersion-type packless pumps. Serpentine immersion-type gas burners heat the solutions. Each tank is equipped with dual sliding screens, which remove solid impurities from the solution. To fit the machine beneath the low ceiling, all exhaust ducts are on the sides of the machine rather than on the top. A blower at the exit end of the washing machine removes some water from the parts, helps to blow out liquid trapped in recesses.

Fig. 3 — These star wheels on the conveyor hangers engage adjustable pins on the conveyor track that runs through the electrostatic spray painting area, causing the swivel-mounted hangers to be positioned properly while being sprayed so that all sides of parts are painted.

★ ★ ★

Combination Oven: Dry-Off Section

The conveyor takes parts from the washing machine to the rooftop oven, a combination dry-off and paint-bake oven.

This A-type oven is 11 feet high at its highest point inside, and slopes down to 10 feet. It is insulated by resin-impregnated wool batts six inches thick, compressed to four inches when installed.

The oven has two sections. One section is used to dry parts after washing, while the other is for baking paint. By building the oven as a single unit and then partitioning, it is possible to have two temperature zones: one for drying and one for baking; heat is conserved, since the insulated partition separates

two heated zones, and neither zone can lose heat to the outside at this partition; both zones of the oven can be heated by a single gas burner; keeping the two units together also conserves space.

The oven is supported independently. Vertical steel beams extend to the floor of the plant, support the oven without placing additional load on the roof.

This method of support was necessary to avoid costly additional roof supports that would otherwise be necessary to support the weight of the oven plus the heavy snow load that accumulates during winter months.

The dry-off section of the oven is 33 feet long and nine feet wide. Parts enter and leave through an opening seven feet wide by 10 feet high, spend approximately seven minutes in making a 75-foot-long double pass. Temperature is 350 deg. F. in this section.

Painting

The hot, dried parts are carried along a zig-zag-shaped section of conveyor so that they are cooled before they enter the painting area. Parts are electrostatically sprayed, but must first be "reinforced" by hand spray to adequately cover areas that would not be reached by the electrostatic spray. One operator sprays these areas in a water-wash spray booth. The conveyor travels through this booth just before it enters the semi-circular electrostatic spray booth.

Star wheels on the swivel-mounted conveyor hangers (Fig. 3) engage adjustable pins attached to the conveyor track while traveling through the electrostatic spray booth. This causes the hangers (and parts) to be properly positioned as they travel through the booth, so that all sides of the parts are painted in one trip around the disc. Booth is exhausted through the roof.

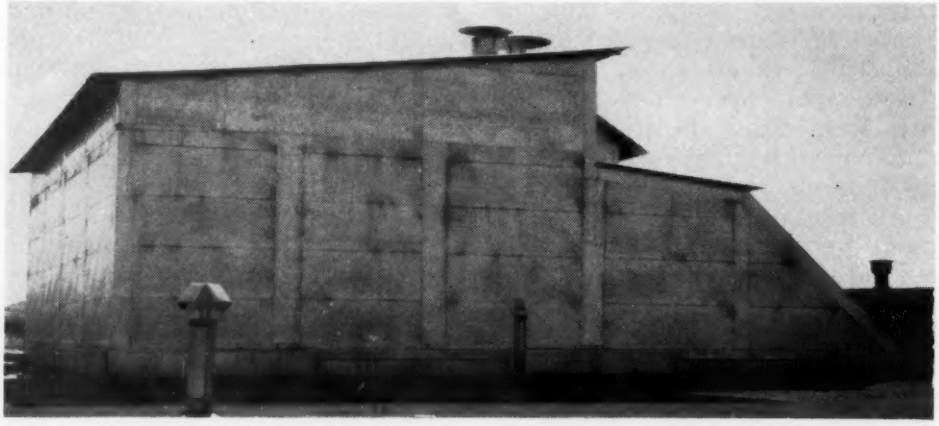


Fig. 4—Roof-mounted baking oven is partitioned into two sections: one part is used for drying parts after washing, the other is used for baking parts after painting.

Combination Oven: Paint Baking Section

Painted parts travel back to the oven (Fig. 4), enter an A-type opening seven feet wide by 10 feet long, spend 20 minutes in making four passes and traveling 200 feet in the baking zone. Temperature in the baking zone is 300 deg. F. and is uniform within a range of plus or minus two deg. F. Smoke-chart readings taken at various places in the oven by sending a temperature recorder through on the conveyor verified the temperature variation.

This close control of temperature was attained by proper placement of ducts. Heating the oven to operating temperature on zero days requires about 45 minutes. The oven is equipped with safety controls that meet Factory Mutual specifications.

Finished parts are unloaded from the conveyor after being carried through a cooling zone. This completes the process, which takes about one hour and 20 minutes.

Test Methods for Magnesium Treatments. By F. W. Pfohl and H. T. Francis, Armour Research Foundation for Wright Air Development Center, U. S. Air Force. 62 pages. Order PB 131600 from OTS, U. S. Department of Commerce, Washington 25, D. C. Price, $1.75.

A promising method for determining the quality of surface treatments for magnesium alloys was developed after a study showed existing tests for corrosion-inhibiting power of coatings to be unsatisfactory. The new method was based on measurement of paint adherence after exposure to corrosives.

The technique involved the "Gauze-Peel Test," in which a gauze strip is embedded in the organic coating. After exposure to accelerated corrosion, the gauze is peeled from the surface. Both quantitative (peel strength) and qualitative (visual examination of the stripped area) evaluations can be made easily.

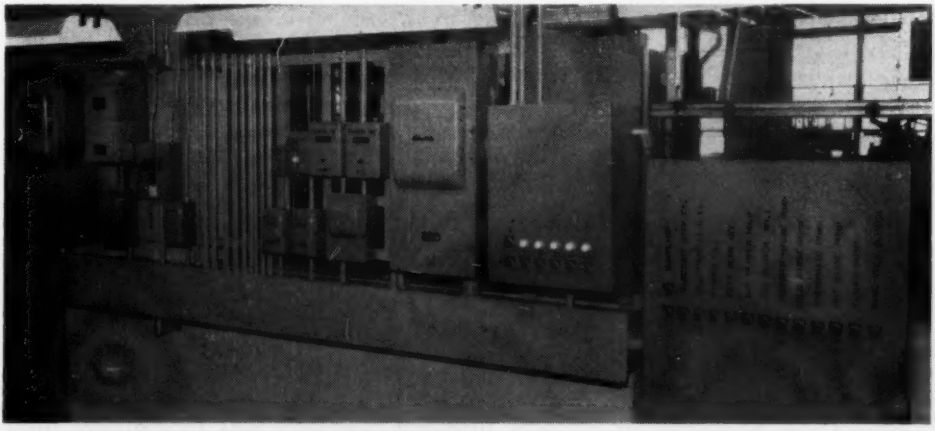


Fig. 5—Control panel and switches for the entire painting system. (Photographs courtesy Ransohoff, Inc., Hamilton, Ohio, and Krueger Metal Products Co., Green Bay, Wisconsin.)

Metals Memos

News about metals and metal products . . .

Zinc Zooming

Consumption of zinc is on the increase again, reversing a downward trend that began in 1956, according to John L. Kimberly, executive vice president of the American Zinc Institute. Slide ended in July, says Kimberly.

The AZI executive cited statistics to support his long-term optimism:

- Market grew from 250,000 tons in 1932 to 1,100,000 tons in 1956.
- Zinc-coated steel is an important segment of market for zinc and use of this is on the increase. Annual rate is now 6,000,000 tons of steel protected by zinc in some form. Galvanized coatings account for about half of this, or 3,000,000 tons, and steel-industry sources predict this will increase to 4,000,000 tons by 1965.

Corroded Coolers

Leonard C. Rowe of General Motors Research Laboratories warns that cooling systems of light metals that may show up in near-future autos will introduce new problems for anti-freeze chemists.

In a speech before the Chemical Specialties Manufacturers Association, researcher Rowe pointed out that manufacturers are already investigating the problem. Present rust inhibitors and anti freezes must be modified to do the job or new method of cooling will have to be developed, he said.

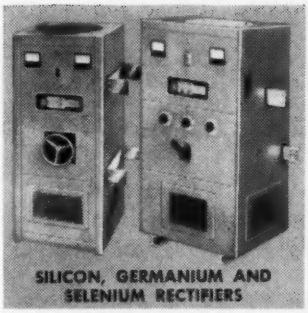
Automotive Assignments

There are probably no engineers working harder to lose their present assignments than those who are working on development of reciprocating automobile engines. So says Professor Frank L. Schwartz of the University of Michigan Department of Mechanical Engineering in a recent speech before the Annual Meeting of the American Society of Mechanical Engineers.

Reason, says Professor Schwartz, is that reciprocating engines, especially the big ones (above 200 h.p.) are becoming so complicated and expensive to manufacture that gas turbines will soon become competitive.

Gas turbine can use fuel oil as readily as gasoline, has fewer parts, is more competitive on a production-cost basis, especially when compared to reciprocating jobs with expensive fuel-injection systems, Professor Schwartz continues.

The U of M professor expects that gas turbines will first make their appearance on a mass-production basis in low-cost autos, even though individual models may show up earlier in sports cars, trucks and buses.



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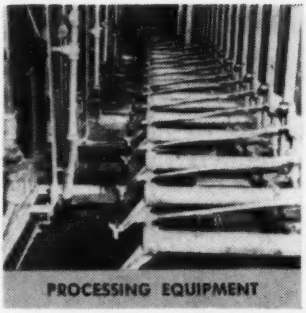

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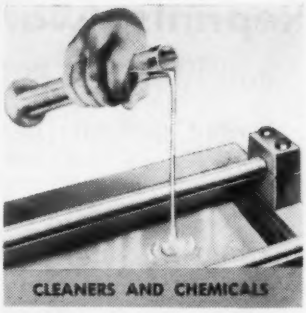

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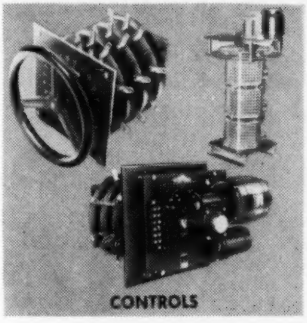

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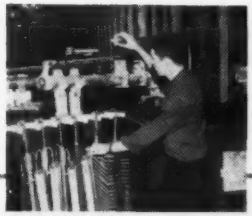

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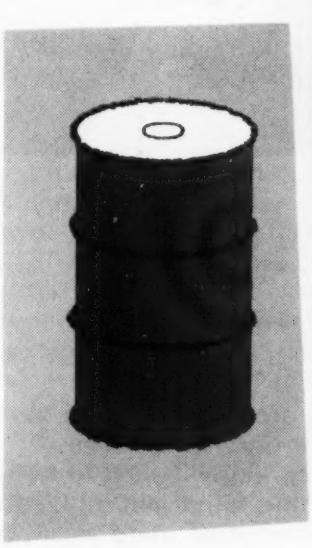

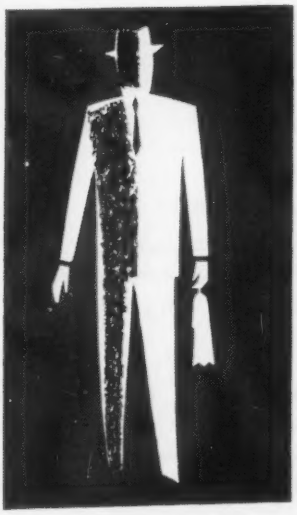

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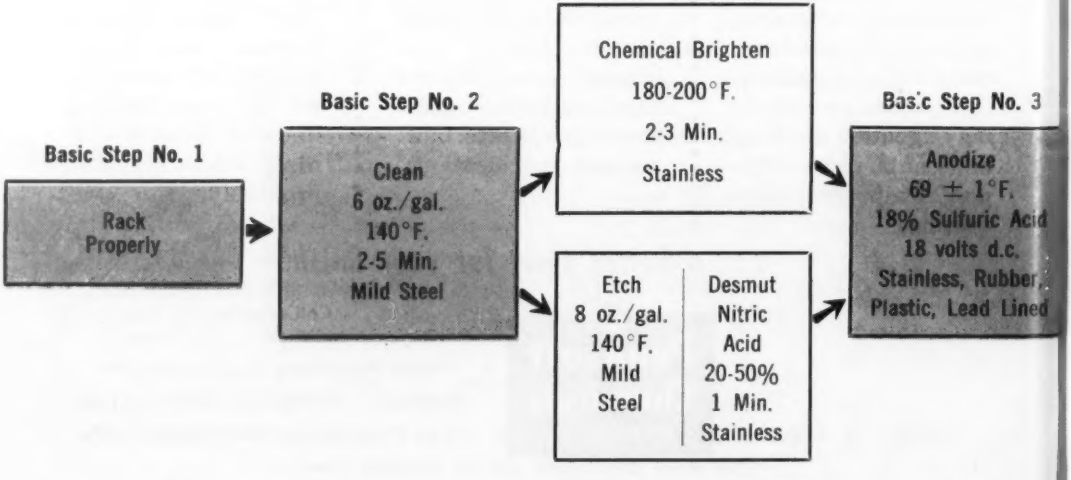
Four Steps to Successful Anodizing

By J. B. KERR

Finishing Engineer
Reynolds Metals Company
Richmond, Virginia

Architects, designers and stylists constantly strive to produce products with a finish that combines striking colors and excellent protection. To get these qualities from aluminum, anodic coatings will usually do an admirable job. They are being applied more and more every year.

Producing durable and colorful anodized films is not difficult. Four essential processing steps must be controlled carefully and performed efficiently. Once these have been



mastered, the rest should be easy.

Before discussing actual processing, however, it's important to mention the part played by alloys. There are many aluminum alloys, and some of them are better suited to anodizing, especially bright anodizing.

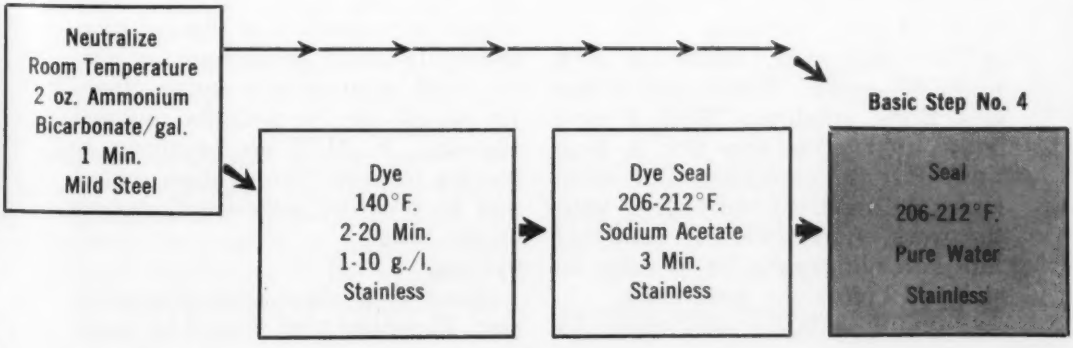
First, for sheet products, for bright finishes, and for automotive parts particularly, alloys 5357 or 5457 are normally used. These are sheet products. For extrusions, alloys 6063 and 6463 are used. They match the sheets well after both have been anodized or otherwise finished.

In the two pairs of alloys mentioned above, only the second digit changes in each case for the second member of the pair. Otherwise, the numbers are the same (6063 and 6463, for instance). The second digit indicates variations in the basic alloy. In these cases it indicates that higher purity aluminum was used for the alloy. Purity is important in producing bright anodized products, since higher purity is necessary to produce brighter anodized finishes.

Another sheet alloy referred to as MD27 is being developed primarily for use on automobiles. It brightens and finishes well.

For architectural use, RF-10 sheet and extrusions are recommended for clear or silver finishes. Alloy RF15 is used to produce very light gray shades, particularly in sheet products, and RF20 for dark gray.

There are other alloys for special effects and special applications, but these are the most common for use in bright or architectural anodizing.



"Titanium is being used more and more as the rack-building material."

The point is that it is important to select the proper alloy for a given application.

Four Basic Steps

There are four basic processes that must be done carefully to get good anodizing. You cannot get good anodic films without these four no matter how much time you spend on the rest of your system. And if these four are done well, you'll usually do a pretty good job no matter what else you "goof up" in the system.

So anodizing isn't difficult after all. Let's look over the four basics: 1) Good racking. 2) Careful cleaning. 3) Uniform, constant temperature in the anodizing bath. 4) Clean, hot water in the sealing tank. Ignore any of these, and you'll have trouble.

Racking: Basic Step No. 1

The only purposes of any rack are to hold the parts securely and to allow current to pass through the parts during anodizing. The rack must be substantial, so that it does not shake off the parts during processing, and parts must be attached firmly so that good contact is maintained during anodizing.

There are many materials used to make racks. Aluminum is the first thing anodizers used. Everybody used aluminum for a long time. But in anodizing, aluminum racks are anodized right along with the work. And since the anodized film is a non-conductor, it must be stripped before the next cycle.

Titanium is being used more and more as the rack-building material. It is not anodized, needs no stripping, and withstands all the processing steps without detrimental effects. On the other side of the ledger, titanium is difficult to work with. It's hard, it work hardens rapidly, and it's expensive. But it's by far the best material for anodizing racks, and particularly for rack contacts. Racks can be made of aluminum that is protected with a rack coating and then equipped with titanium contacts, but in general it's more satisfactory to use titanium for as much of the rack as cost considerations will allow.

By designing the rack so that each part is contacted in at least three places, electrical contact will be good enough to assure electrical flow through the part. Finally, racks should be designed to hold the parts in such a way that solution is not "dragged" from one tank to the next in indentations and recesses of either the part or the rack.

Cleaning: Basic Step No. 2

The cleaner tank is usually made of mild steel. It is filled with a solution formulated for use on aluminum. Concentration of this solution is usually about six ounces per gallon, and temperature ranges from 120 to 160 deg. F., with the average 140 deg. F. Mild air agitation is needed to keep the solution mixed and to provide "scrubbing" action on the parts.

Rinsing

There is a rinse tank after each step. The rinse tank should be made

of the same material used for the tank preceding it. Rinse tanks should have good overflow, and the water should be kept clean. Between the cleaner tank and the first rinse tank a spray rinse is often installed to remove soap suds from the parts before they enter the immersion rinse. This prevents contamination of the rinse tank and saves water.

After being cleaned, parts may be treated in one of two ways. Very few parts are anodized with just the surface provided by mechanical finishing—that is, very few are mill finished. Most parts are either chemically brightened or etched.

Chemical Brightening

Parts that are to be brightened enter a tank of chemical brightener. This solution is usually contained in a stainless steel tank (should be 316 stainless or better). The solution is heated to 180-200 deg. F. Slight air agitation is helpful. Bright-dip time is from two to five minutes, depending upon solution concentration. Solutions decrease in concentration with use.

Bright dips for aluminum are basically mixtures of phosphoric and nitric acids, usually with some copper and a wetting agent added. They can be made with 94 parts phosphoric acid and six parts nitric acid, or can be bought ready to use, as commercial bright dips.

Two problems are common in bright dipping. Water enters the tank via drag in and dilutes the solution, which causes pitting of the parts. The other problem is build up of aluminum in the solution. If the concentration of aluminum rises above 50 g./l. parts will not be brightened as well as is possible.

The addition of copper to the basic solution improves brightening. Wetting agents help, too. They form a thin layer over the top of the solution and reduce fuming. Bright dip tanks should be well vented to hold fume concentration to a safe level. Eventually, bright dip tanks must be dumped and recharged. There are a number of companies who will buy the spent chemical brightener.

After bright dipping, transfer parts into the rinse tank quickly. Transfer time is important. Keep it short—less than 30 seconds. This rinse tank should have good agitation, and preferably it should contain hot water. Cold water will do the job if it is agitated vigorously. In any case, all bright-dip solution should be removed from the parts before they proceed, and it takes vigorous methods, since bright dip solutions are like syrup—they cling to the parts and are difficult to remove.

"Mr. Feete has tremendous sales resistance . . . otherwise why would I be out here?"

"It is best to etch until little change is occurring in the appearance of the parts."

Etching

The other type of chemically produced surface texture is an etched surface. Etching is performed in a mild steel tank that contains approximately eight ounces of caustic-type etchant per gallon of solution. This solution is operated at 140 deg. F. Commercial etchants contain chemicals that keep hard sludge from forming in the tank. When the etch tank is drained and cleaned, the soft sludge formed is easily flushed down the drain with a hose.

Etching Time

It is best to etch until little change is occurring in the appearance of the parts. By doing this, the problem of matching etched surfaces is eliminated, since all surfaces have the maximum etch. Usually this point is reached in about five minutes, and after this, only metal removal is occurring—not appearance change.

Desmutting

Parts coming out of the etching tank are black. Black smut is characteristic of any surface that's etched, and therefore the next step in the process is to remove this smut. Smut would come off in the anodize tank without pretreatment, so that it is possible to go directly from the etch tank to the anodize tank. But this dumps sludge into the anodize tank, where it causes some difficulty. So it's a lot easier to desmut in a separate tank.

Desmutting solutions are normally operated at room temperature in stainless steel tanks. They are usually composed of about 16 ounces of dry acid chromate per gallon of solution, or may be made up from liquid concentrates. A solution of 20-50 per cent nitric acid in water can be used for desmutting, but nitric acid is difficult to handle and use. Therefore it is usually preferable to use prepared materials, for safety reasons.

Now that the pretreatments have been completed, parts should be protected quickly, since they stain easily at this point, whether they have been etched or chemically brightened.

Anodizing: Basic Step No. 3

Most anodizing tanks are made from stainless steel. Actually, the only requirement for the tank is that it hold sulfuric acid (usually 18 per cent). Rubber-lined tanks can be used, plastic tanks are satisfactory. The only difference is that a metal tank can serve as the cathode, while lined or plastic tanks require lead cathodes to provide a conducting surface.

Anodizing Temperature

Temperature is very important, or rather, maintaining a constant temperature is important. Actually, anodizing can be done at any temperature, but whatever temperature is selected must be maintained to secure uniform results. Normally, the anodizing solution is kept at a temperature somewhere between 65 and 72 deg. F. Take 69 deg. F., for example. Since it would be very difficult to maintain this temperature exactly at all times, this usual-

ly becomes 69 plus or minus one deg. F., or 68-70 deg. F. Now this temperature should be held within these limits *at all times,* and *everywhere in the tank.*

Temperature is probably the largest source of trouble in the whole process. Some of the current being used in the process is dissipated as heat. The heat must be removed immediately. This is done by circulating the solution to refrigerating coils and back through the tank. Air agitation aids in maintaining a uniform temperature throughout the tank. But the agitation should be uniform — the tank should bubble all over, not just in the center.

Anodizing Current

Voltage should be set at whatever level is necessary to produce a current of 12 a.s.f. This can be done by measuring the area of the aluminum exposed to the anodizing solution and then calculating the current required to reach 12 a.s.f. Usually this works out in practice to be 15-18 volts. If in doubt, set the voltage at 16½.

Film Formation

As the current is applied, the sulfuric acid solution breaks down and deposits oxygen on the anode, which is the part being anodized in this case. The oxygen reacts with the aluminum to form aluminum oxide. As more oxygen is produced it travels through the porous film already formed to the metal and forms more aluminum oxide. Thus the anodic coating grows from the inside, pushing out the coating already formed.

Anodizing Time

Anodizing time depends upon the service requirements of the parts. For parts that will see only interior service, a short time is sufficient — ten minutes, perhaps, to give a film thickness of 0.00013 inch. For parts that will be used in exterior service, such as automobile parts, time must be increased to 20 or 30 minutes, producing a film thickness of 0.0002 to 0.0004 inch. For architectural work, where parts are expected to last an undetermined length of time, parts are anodized for 60 minutes, to produce a film of 0.0008 inch.

Although film thickness is a function of anodizing time, it is wise when drawing up specifications to specify film thickness rather than anodizing time, since the proper anodizing time will produce the required film thickness only if all conditions are exactly as they should be during the anodizing cycle. While it is true that even a film of the proper thickness may be inferior if the temperature during anodizing is too high, this is difficult to check in examining the finished product. The customer can specify film weight in addition to film thickness to check the quality of the film, but this specification has some limitations.

Measuring Film Thickness

The most accurate and positive method of measuring anodic film thickness is to cut off a sample of the work being anodized, mount it in plastic, polish the edge of the specimen, and examine it with a calibrated microscope. For production use, where the film must not be destroyed, commercially available thickness testers may be used with good results.

Rinsing After Anodizing

Parts that will be dyed after anodizing are sometimes rinsed in a

solution made up of two ounces of ammonium bicarbonate per gallon of rinse solution. This weak basic solution aids in neutralizing the sulfuric acid remaining on the parts. Thorough rinsing to remove all acid is important whether the basic solution or pure water is used to rinse the parts.

Sealing: Basic Step No. 4

Sealing takes place in a stainless steel tank. The solution is operated at 206 to 212 deg. F. and it must be this hot. Sealing is possible at any temperature above 200 deg. F., but is slow until the 206-212 range is reached. If the temperature is less than 200 deg. F., the parts are just getting hot and wet. They aren't being sealed. Sealing squeezes the pores shut, improving the resistance of the anodic coating to abrasion, corrosion and staining.

Dyeing

Parts that must be colored are now immersed in organic or inorganic dye that is contained in a stainless steel tank. Temperature, about 140 deg. F. Concentration of the dye, ½ to 10 oz./gal. The part remains immersed in the tank until the proper shade is attained. Longer immersion times produce deeper shades. Control is visual, at least for the colored films. Instruments are available to aid in matching grays, but blues, reds, yellows and other colors of the spectrum must be controlled visually.

Color matching has caused a lot of problems. The best method found to control color is not easy. It consists of stationing a man at the dye tank with some color chips. He is instructed to immerse the parts until they match the standard color chips. If the parts are too light when removed from the tank, the operator should put them back into the tank. He must not let them get too dark or they'll be rejected.

If a very light color is desired, the dye concentration is lowered. Color can be changed somewhat by lowering temperature, but the solution operates best when hot.

pH should be controlled according to the manufacturer's recommendations, and dye time kept within reason. Each rack has to stay in the dye a little longer as the dye is consumed. When time required to produce the shade desired becomes excessive, more dye is added. This is a rather crude way of controlling a dye tank, but it's the way most people do it.

Dye Seal

After the dyed parts have been rinsed, they are immersed in a dye-seal tank. This tank contains a weak solution of nickel acetate. The nickel acetate reacts with the anodic film to form nickel hydroxide, which "plugs" the pores to seal the dye. The solution temperature is 206 to 212 deg. F., and parts remain in this tank for two to three minutes.

After coming out of the nickel acetate solution, parts are again immersed in a hot water seal tank, which is often the same tank used for sealing after anodizing.

Color Versus Current Density

Deeper colors can be produced by anodizing at higher current den-

sities, since the pores produced by anodizing at higher current densities are larger, and you can get more dye into a given film thickness than would be possible with the smaller pores.

Dye Permanence

Anodizers and aluminum manufacturers had been trying to improve permanence for years. At first the dyes used were textile dyes. But aluminum oxide is a natural catalyst, and causes dyes to fade quickly, especially in sunlight.

Then somebody said "We've been fighting rust—iron oxide—for years. Let's quit fighting and join it." By using ferric ammonium oxide as a dye, iron oxide was produced in the anodic film, and a dye was found that wouldn't fade. The color is the "gold" often seen on buildings.

Another dye that shows promise of being permanent is a black that hasn't yet been patented. It's an inorganic material, and it's at the bottom of the thermodynamic scale. If this dye weren't black to begin with, it would turn black, and if you exposed it to industrial atmosphere and any color change could take place, it would be to turn blacker.

To sum up permanence, the gold inorganic is the best tried and proven material. The anodic film should be at least 0.0008 inch thick for best permanence. The black looks promising, and there's a blue and a chartreuse that are pretty good.

In the neutral shades, it's possible to produce a gray with good permanence. It isn't produced by dyeing, but is produced by using a silicon-bearing alloy. The gray color is caused by the particles of silicon that remain in the anodic film. The anodic film itself is essentially colorless, but thousands of small gray specks that can be seen only under a microscope make the aluminum look gray to the naked eye. If you want a light gray, you don't anodize it as long. Anodize longer, and more of the specks become visible, producing a darker gray.

One problem with this alloy is that anodizing times from batch to batch of alloy may have to be varied to produce uniform color. The reason for this is that the silicon particles are in the alloy in smaller bits, or are distributed differently, and thus produce different shades of gray. Therefore, it is necessary to observe the color and vary the time to maintain uniformity from batch to batch.

This material was discovered when it was noted that aluminum welded with a 4043 welding rod, which contains silicon, would turn gray at the weld when anodized.

"Well, I sure hope Mr. Chiefpeddler was a better teacher than he is a sales manager."

This same alloy was rolled out into sheets to produce the alloy that will result in a gray color when anodized. It's designated RF-20.

Brightness of Parts

Brightness depends upon the alloy, as explained previously. Higher-purity alloys are used when a bright surface is desired. Secondly, good chemical polishing is necessary for production of a bright surface. Thirdly, anodizing dulls the surface somewhat—the heavier the anodic film, the duller the part becomes. But a 99.99 per cent pure aluminum will be mirror bright even after anodizing for 30 minutes. Thus if the proper alloy is used and the parts are processed with good technique, excellent brightness is possible.

Some people try to produce a brighter film by reducing voltage and anodizing at a lower current density, but this is "cheating Peter to pay Paul" since the brightness added is at the expense of film thickness. In other words, the part is brighter only because the film is thinner.

Anodizing Assemblies Containing Sheets and Extrusions

It is best to assemble after anodizing, especially in the case of assemblies in which both sheets and extrusions are used. In this way the sheet can be etched or anodized for a different length of time than the extrusion in cases where this is necessary to match color, texture or brightness. This also eliminates the problem of trapping anodizing acid at the joint of the sheet and extrusion.

Hard Coatings

Hard anodic coatings (Martin and Sanford Hard Coat Processes) are produced by raising current density substantially. Parts may be etched, but not chemically brightened. Racking and cleaning are conventional. Temperature is lowered to 25 deg. F. and current density is boosted so that the film is built up faster.

★ ★ ★

Electrochemical Mechanisms of Noble-Metal/Hydrogen Systems: Part I—Platinum. By S. Schuldiner, Naval Research Laboratory. 36 pages. Order PB 131526 from OTS, U. S. Department of Commerce, Washington 25, D. C. Price, $1.00.

This report is the first of a projected series reviewing experimental and theoretical findings of a study of the electrochemical mechanisms of noble-metal/hydrogen systems. The research was conducted to obtain a basic understanding of electrochemical processes which might lead to important advances in such fields as corrosion, battery development, electroplating, electropolishing, catalysis, and other surface phenomena.

Derivation of the kinetic equations of hydrogen-producing reactions is discussed, along with the experimental techniques utilized. Important among these was an electronic current interrupter which made it possible to "see" the condition of the electrode surface and to separate and measure the various components of the overall electrode potential. Results of studies of the electrode mechanisms of platinum also are presented.

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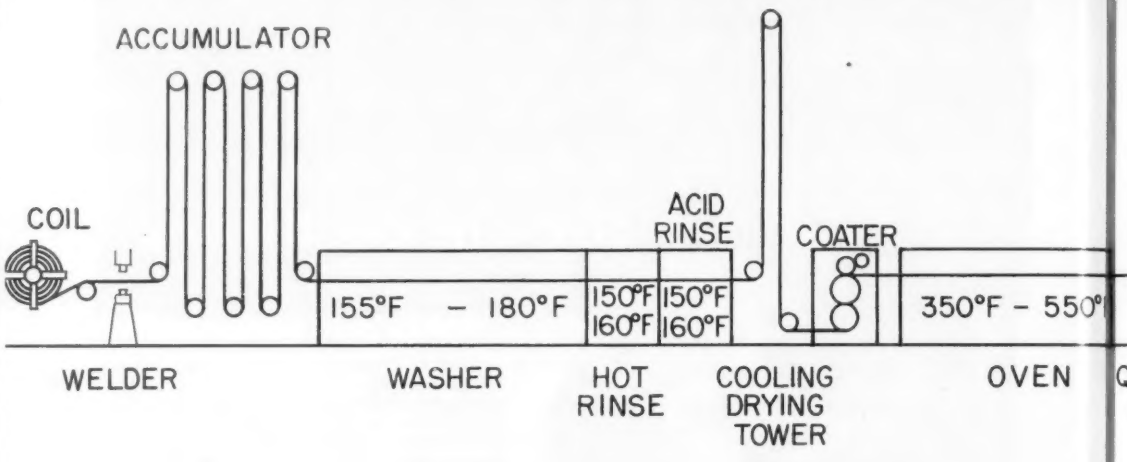


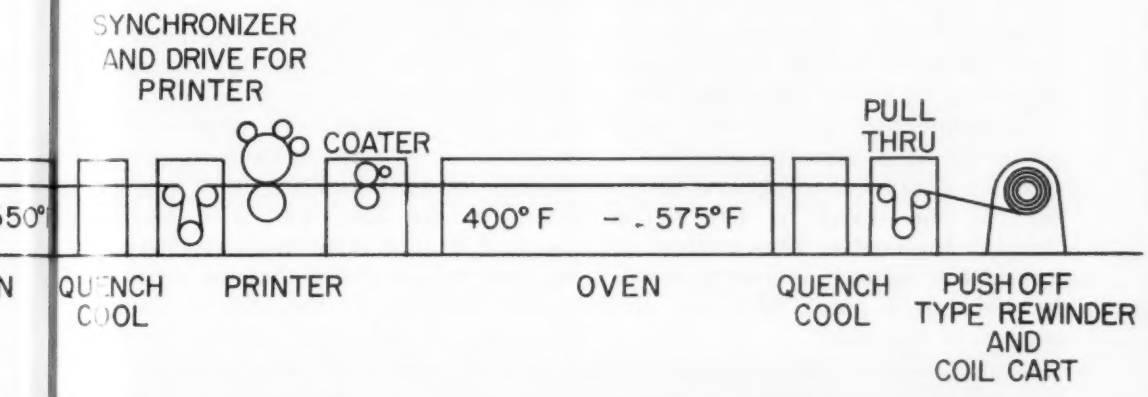
Continuous line for processing coil stock cleans and treats the metal, rolls on a paint finish, rolls on clear lacquer . . . Colorful fastening seals are formed from the painted strip . . .

Stanley Steel Strapping Division of Stanley Works now offers seals for its steel strapping in bright colors and with identifying trademarks, supplementing a line of seals formerly available only with a plain metallic finish.

To finish the new seals Stanley installed a roller coating line that applies a base coat, multiple-color printed insignia or trademark, and a clear coating that protects the printing from subsequent forming operations.

The finishing process is continuous, from cleaning to rewind of the finished coil stock. Metal coils 0.018 to 0.042 inch thick are cleaned, conversion coated, dried, painted, baked, cooled, printed in several colors, coated with a clear finish, baked again, quenched and rewound as they travel through the line at a speed of 40-60 f.p.m.

s for Steel Strapping



The 12-inch coating line was installed by Gasway Corporation. It finishes coil stock up to 10¼ inches wide.

Stock begins its trip through the line at the feed reel. Two feed reels are mounted side by side at the head of the line so that one reel can be loaded with stock while the other reel is peeling off into the line. The stock travels through an accumulator which stores enough stock (by running it over a series of separate rollers) to keep the line in continuous operation while the end of the coil just used is welded to the beginning of the next coil.

This is done by a spot welder between the feed reels and the accumulator. From the accumulator the stock travels through a 30-foot-long washer that contains a solution of Parco 524 (temperature 170 deg. F., time 30-45 seconds). Then it is

rinsed in hot (170 deg. F.) water for 4 to 6 seconds. A trip through a tank of Parcolene No. 1 (temperature, 180 deg. F.) for 4 to 6 seconds completes the cleaning procedure.

A cooling tower cools and dries the stock before it enters the first roller coating machine.

The first coater applies the paint, evenly metering it to the rolls at rates to produce any given thickness from ½ to 1½ mils. The coater transfers the finish to the stock by means of a paint-carrying roller that revolves in the opposite direction to the travel of the strip through the coater. This method of application imparts a smooth, evenly distributed paint film over the surface of the stock.

The coater is designed so that it will deposit an even film thickness regardless of the normal imperfections found in most coil stock. The coater also imparts back tension to the strip so that it can be fully suspended in the baking ovens. It is possible in this type of strip-coating operation to coat both sides of the stock in one trip through the coater, and each side can be painted a different color.

The paint on the stock is dried in a gas-fired recirculating oven which subjects the stock to varying temperatures at different points in the oven. For the normal run at Stanley Steel Strapping the temperatures are 350, 400, 575, and 550 deg. F. The strip makes a double pass, which means that the strip travels through to the end of the oven, then doubles back over a roll-

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"It is possible . . . to coat both sides of the stock in one trip through the coater."

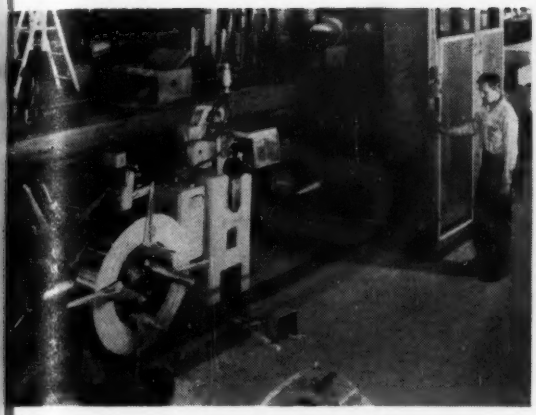

Fig. 1—Unwind reels, spot welder for joining coils and the accumulator which stores strip for use during the joining operation.

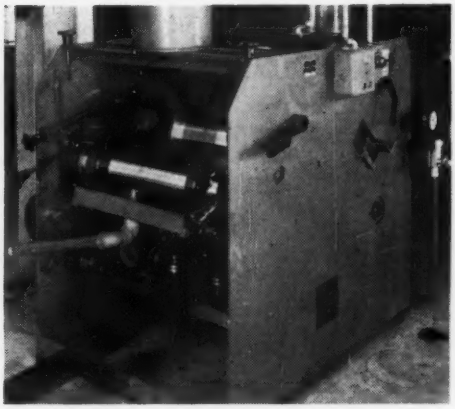

Fig. 2—First coater applies the paint film to the strip in an evenly metered thickness. This is then baked and afterwards travels to printer.

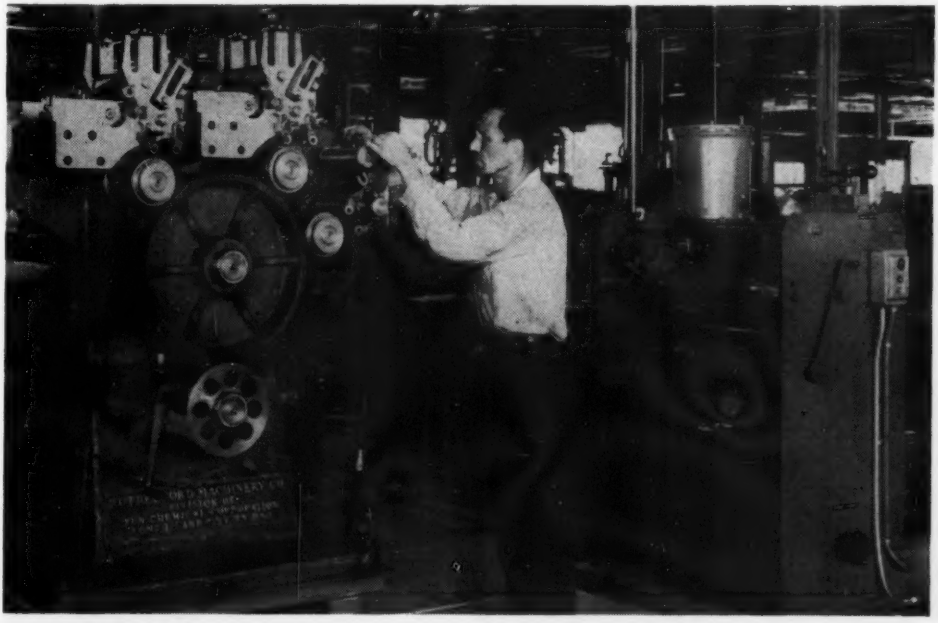

Fig. 3—Adjusting the printer at Stanley Steel Strapping. This machine applies the printed trademark or message to the strip after it has received a base coat and then been baked.

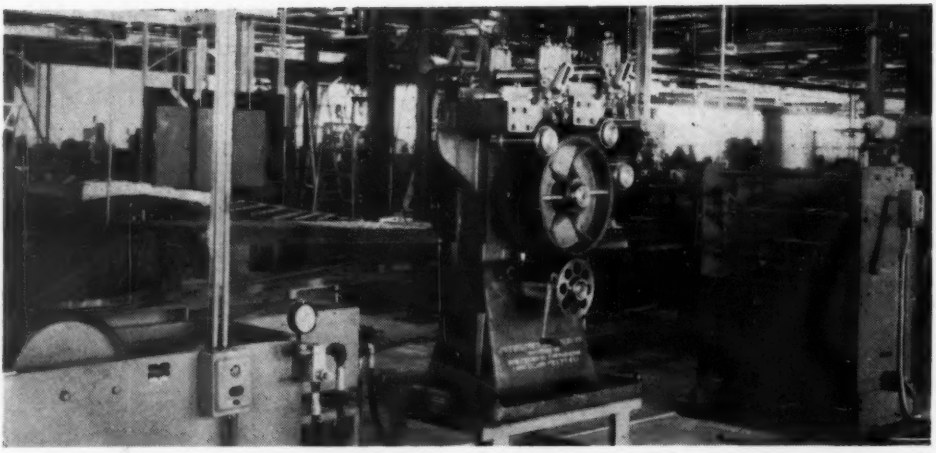

Fig. 4—Second coater (at right) applies a clear protective finish, which is also baked in ovens as it passes through to the rewind units. The stock is then quenched in cold water.

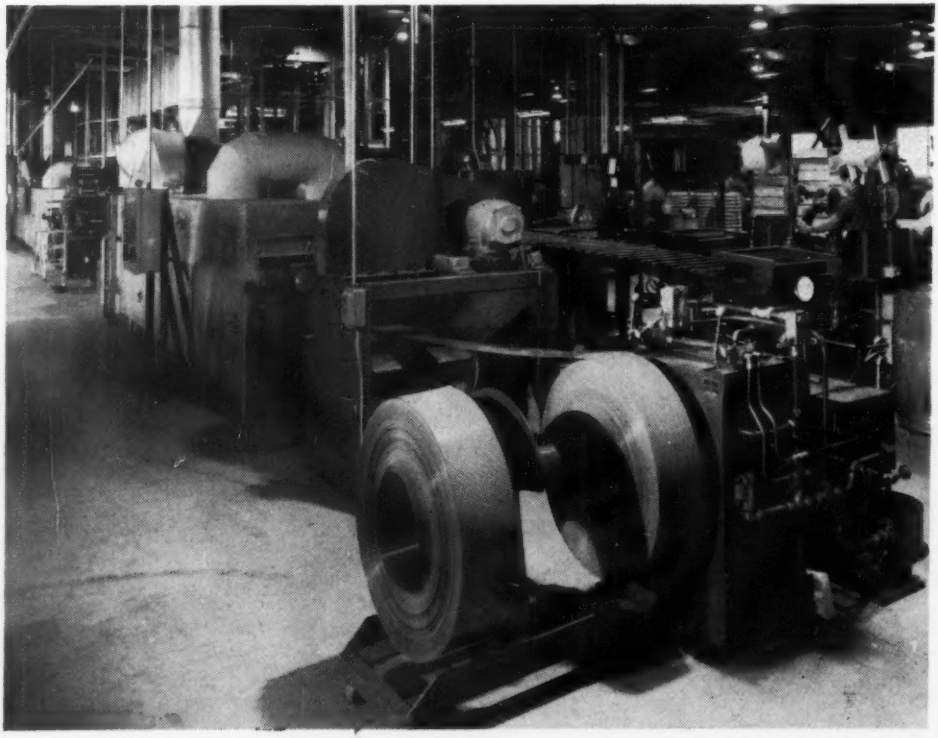

Fig. 5—Overall view of line from the rewind end. Ovens and strip drive units are shown after second coater (far left). (Photographs courtesy of Gasway Corporation, Chicago, Ill.)

er and returns to the head section of the oven. The strip leaves the oven, passes over another roller and resumes its forward travel, passing beneath the oven.

Painted and baked strip is rapidly cooled in a tank of cold water. As the strip leaves the water-quench tank, excess water is removed by a pair of squeegee rolls. Remaining moisture is evaporated from the surface by the heat left in the stock from baking.

The printing section applies a pattern on the painted and baked stock. Quick-drying ink is used for printing so that the strip can pass directly from printing to the final protective coating operation.

The clear protective finish applied over the printing is baked in an oven, and the stock is quenched in a process similar to that used for applying the base coat. Temperature in the pass through the oven builds up from 400 at the beginning to 575 deg. F. prior to the quench.

The finished strip moves through a pull-through unit and is rewound on a push-off type rewinder. As the rewind reel becomes completely filled, the strip is cut off, the rewind stopped, the coil removed, and the loose end of the new strip re-attached to the rewind unit.

Principal duties of the finishing-room operators are to keep the coaters charged with paint (enamels used are supplied by another division of the Stanley Works, Stanley Chemical Company. These include several colors — brown, aluminum, green and white — as well as the clear top coat which seals the printed message or trademark.) and to feed raw stock into the line and remove finished stock from the rewind.

The finished stock is formed into individual seal units, each bearing its trade mark or message. Forming is done *after* finishing without damage to the finish.

★ ★ ★

The Recovery of Embrittled Cadmium Plated Steel. By H. H. Johnson, E. J. Schneider, and A. R. Troiano, Case Institute of Technology for Wright Air Development Center. Order PB 131654 from OTS, U. S. Department of Commerce, Washington 25, D. C. 22 pages. Price, 75 cents.

The baking process used to mitigate hydrogen embrittlement during cadmium electroplating of steel is not always effective. An evaluation reported in this volume of the influence of cadmium electroplate upon the recovery characteristics of hydrogen embrittled steel indicated that the cadmium plate strongly deters hydrogen outgassing upon baking. Recovery rate decreases as the plate thickness increases.

Other factors of significance concerning the recovery process are also evaluated. Utilizing these results, a new and highly efficient technique for minimizing hydrogen embrittlement was developed. This method is thought to have great potential as a commercial recovery treatment, and should be of particular value in critical applications where maximum corrosion resistance is desired with a minimum of hydrogen embrittlement and the accompanying susceptibility to brittle delayed failure.

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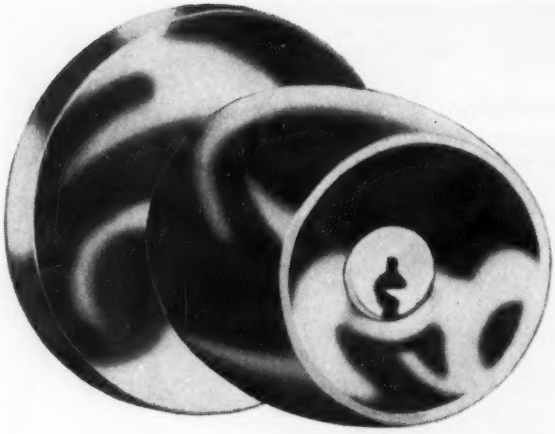


Fig. 1—Typical cylindrical lock manufactured by the American Hardware Corporation.

Bronze Plating Forms Attractive Finish for Cylindrical Locks

By T. P. McFARLANE
Director of Research and Testing Laboratories
American Hardware Corporation

The importance of selecting the best finish for parts of cylindrical locks (Fig. 1) cannot be overstressed, since upon the correct functioning and appearance of the parts depends the reputation of the manufacturer. The American Hardware Corporation has carried on continuing research to assure use of the best available finish for lock parts (Fig. 2). For the past year and a half we have been using a copper-tin alloy bronze electroplate on internal steel working parts of our cylindrical locks and on close tolerance threads.

Among the factors which must be taken into consideration in the selection of a finish for lock parts are the base metal, wear resistance, corrosion resistance and compatibility with other metals with which the parts will come in contact. The base metal used primarily on internal working parts of locks at American Hardware is steel. This metal

is selected for its qualities of hardenability, wear and strength. It will also readily accept almost any plated finish desired.

For special applications, under severe corrosion conditions, such as shipboard or marine use the American Hardware Corporation uses only non-ferrous or stainless steel metals in its lock components. However, for normal applications which involve the largest volume of production, plain steel is used. Steel will rust of course, and must be plated to prevent this rusting from interfering with the proper functioning of the lock parts.

Tests on a copper-tin bronze electroplate showed that this deposit would withstand specified accelerated corrosion tests, and that the deposit was hard, yet had a coefficient of friction low enough to improve the operation of lock mechanisms.

Salt spray tests and outdoor seacoast exposure experiments indicated that deposits of 0.0004 to 0.0005 inch of bronze were required to provide adequate protection. The bronze deposit was not affected by humidity tests.

Sample locksets, exposed for more than a year at an exposure station on the Atlantic coast, are still operating smoothly.

Important in the case of any protective and decorative deposit, the appearance of the bronze plate remains good in service.

Plating Equipment

Plating operations are carried out in a Frederic B. Stevens Model E full automatic barrel plating machine. One man operates the machine which unloads the bronze plated work automatically into shop boxes. A work load of up to 65 pounds goes into each barrel, depending on size and shape of the parts. A deposit having a thickness of 0.0004 to 0.0005 inch is plated on the parts in a 21-minute plating cycle. One barrel unloads every 2 minutes and 5 seconds. Power is supplied by a 12-volt, 7,500-ampere motor-generator set.

Plating Cycle

The process cycle carried out in the barrel plating machine is as follows:

1. Soak clean in MacDermid No. T103 cleaner for 4-5 minutes at 180 deg. F. Cleaner is recirculated.
2. Cold water rinse.

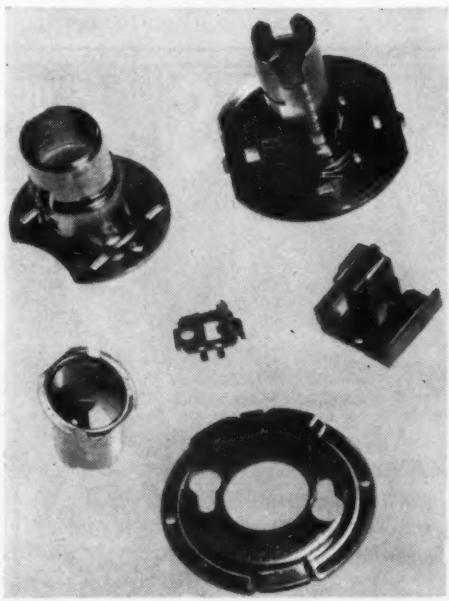
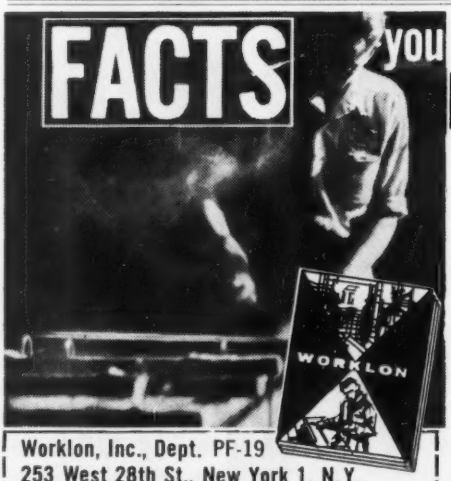


Fig. 2—Intricate cylindrical lock parts plated with bronze. (Photographs courtesy Metal & Thermit Corporation, Rahway, New Jersey, and American Hardware Corporation)

3. Acid dip, 50 per cent hydrochloric acid by volume.
4. Cold water rinse.
5. Cold water rinse.
6. Reverse current clean at 6-8 volts in a solution of 10 oz./gal. potassium cyanide and 3 oz./gal. of potassium hydroxide at 140 deg. F. Steel cathodes are used. This cycle has the threefold purpose of removing any smut from steel or cast iron parts, helping to cut down build-up of bronze on the barrel contact danglers, and helping to maintain the free cyanide and free caustic content of the plating bath.
7. Bright bronze plate in Metal & Thermit bronze plating bath for approximately 21 minutes at 12 volts. Temperature 135-140 deg. F., automatically controlled. A steel tank with steel plate coils is used in this application, although a plastisol coated tank is recommended, as the bronze has a tendency to plate out on certain areas of the tank walls. Making the tank slightly anodic tends to overcome this. Copper ball anodes in steel anode carriers provide the anode area. Tin content in the solution is maintained by additions of potassium stannate. The plating barrels will draw between 400 and 600 amperes each depending on the work load in each barrel.
8. Cold water rinse.
9. Cold water rinse.
10. Cold chromate rinse in a solution of 1-2 per cent by volume of Unichrome No. 95 compound. This tends to passivate



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the bronze plate and prevents tarnishing or dulling of the surface.

11. Cold water rinse.
12. Cold water rinse.
13. Hot water rinse.
14. Hot air dry.
15. Unload into chute and conveyor which dumps the work into shop boxes.

Constant recirculation of the 4,000 gallons of plating solution helps to maintain a uniform temperature and prevent stratification throughout the bath. Periodic filtering through activated carbon is sufficient to keep the solution free from organic contaminants. The activated carbon does not remove the one brightener used which is basically a lead salt. A small amount of the lead from the brightener plates out in the deposit which may account for its antifriction characteristics. A small addition of hydrogen peroxide, approximately one gallon to 4,000 gallons of plating solution, is necessary to activate the copper anodes at the start of plating operations each day.

In the actual plating of the bronze, it was desired to obtain a pore-free deposit with a bright, tarnish resistant finish. Use of a single brightener in the bath, in very small quantities, produces a brilliant finish. Uniformity of color in the deposit is dependent on close control of free cyanide and caustic concentrations, and bath temperature. The copper-tin bronze plating bath has very good "throwing power" also. In some parts there was complete coverage inside a cylinder four inches long with a diameter of one-half inch.

Coming Up: Profitable Reading

Articles to be published in coming monthly issues of PRODUCTS FINISHING:

A Missile-Maker's Titanium Plating Process

Process details on a method of producing adherent plated coatings that make strategic titanium even more valuable . . .

Current Practice in Chemical Milling

A survey of chemical milling processes as they stand today; data on methods being used for cleaning, masking, etching, and for milling aluminum and other metals, such as magnesium and stainless steel . . .

Metal Decorating: Fast Protection, Beauty

Metal decorating has grown rapidly since World War II. Here's how National Can's decorating plant does it today . . .

Finishing Chevrolet Hoods and Fenders

Painting processes used to finish fenders and hoods include careful metal preparation, flow coating of primer, spray application of finish coats and polish-buffing of final finish to a high luster . . .

Studies of Electroless Plating

Increased understanding of the conditions favoring "electroless" nickel plating has resulted from recent research at the National Bureau of Standards . . .

Watch for these and other useful articles in PRODUCTS FINISHING, the Finishing Industry's most informative publication!

Finishing Miniature Toys: How to Paint 25 Million a Year

New electrostatic spray installation helps to boost production for Chicago toy maker . . .

Seven million cars is a big year for the auto industry. But to the world's largest producer of cars—miniatures, that is—this would be a depression.

Chicago's Dowst Manufacturing Company turns out about 25 million die cast toy vehicles ("tootsietoys") annually. In a move to increase production rates the company recently installed an electrostatic spray system. The new system, which makes it possible for Dowst to increase conveyor speed to 16 f.p.m., has cut reject rate and decreased paint consumption, company officials say.

Fig. 1—Dowst Manufacturing management confers about one of company's products. (Left to right) Bill White, general foreman, Alan Shure, vice president and technical manager, and Harry Lawrence, chief engineer.

Fig. 2—Trays of die cast "tootsietoys" are loaded on the spindle-type floor conveyor.

All the "tootsietoys" are produced in an 80,000-square-foot plant built three years ago in Chicago.

Casting

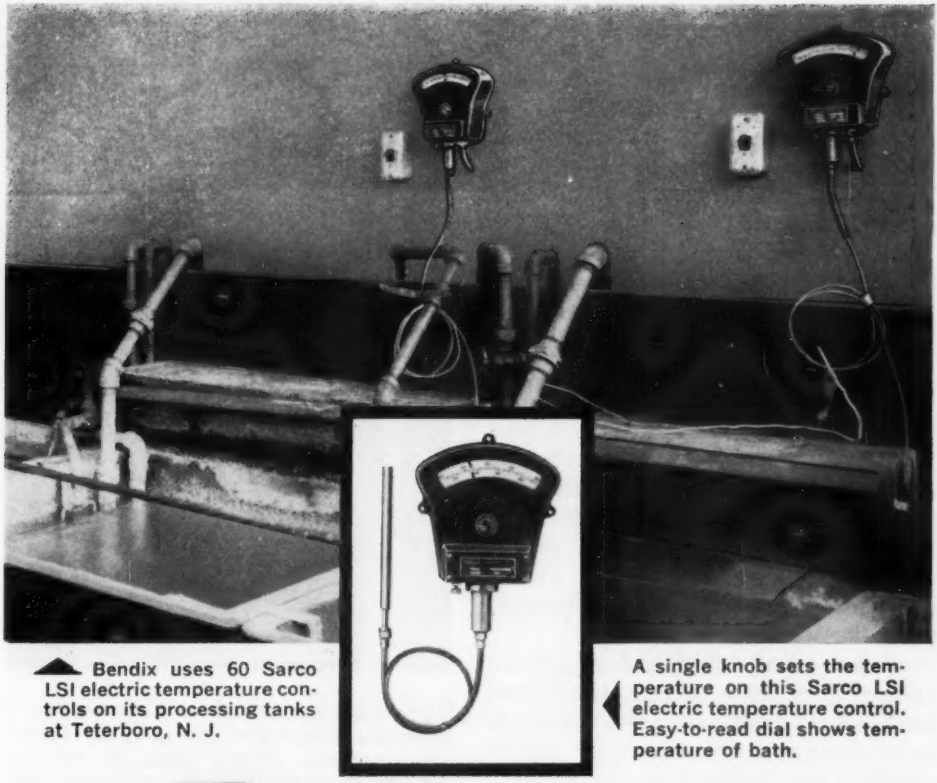
From photos and specs of full-size new-model automobiles, Dowst engineers fashion their somewhat simplified miniature models. The company's own tool and die shop makes the molds which are used to cast the little copies of Detroit's newest.

In the casting department the toys are cast from zinc and hung on an overhead line which takes them to the breaking station, where they are separated.

They are then deflashed in barrel tumbling machines, drilled and cleaned. Then each piece is inspected for sharp edges.

Painting

Unpainted pieces are trucked to the finishing department. Three loaders place the little cars on trays of a spindle-type floor-mounted conveyor. Depending upon the size of parts to be painted, trays hold from



Bendix uses 60 Sarco LSI electric temperature controls on its processing tanks at Teterboro, N. J.

A single knob sets the temperature on this Sarco LSI electric temperature control. Easy-to-read dial shows temperature of bath.

How Bendix controls temperatures in 60 processing tanks with Sarco Electric Indicating Regulators

In the completely modernized plating department of Eclipse-Pioneer Division of Bendix Aviation Corporation at Teterboro, N. J., temperature in all processing tanks is controlled with Sarco LSI Regulators. This standardization has paid off in accuracy, dependability, and economy. Among the varied processes for which LSI's are now used are Black Dye, Dichromate Seal, Parker Lubrite, Hot Water Rinse, Electro Cleaner, Passivate, Black Oxide Copper and Chromium Plating.

You can get a complete Sarco system for as little as $130 a tank

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"Numerous color changes are made in a day."

25 to 60 pieces. The passenger car body, which is a one-piece casting, is three inches long by a little over an inch in width.

Trays are carried along on the 350-foot-long conveyor at a speed of 16 f.p.m. They are mounted at three-foot centers.

Paint is applied electrostatically by a recently installed Ransburg No. 2 bell-type installation. Trays rotate as they move through the electrostatic spray area, so that all parts are coated uniformly. The Ransburg electrostatic spray painting unit consists of four 4-inch atomizing bells in a row, located over the work.

Colors used on "tootsietoys" are red, yellow, blue, green, light blue and olive drab (on the military miniatures). Numerous color changes are made in a day.

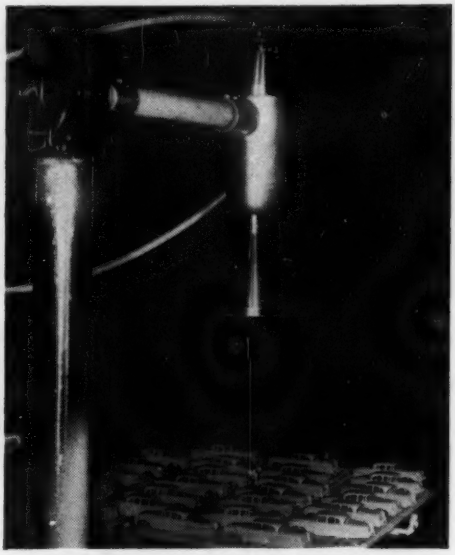

Fig. 4—Closeup of one of Ransburg No. 2 atomizing bells shows fine spray of charged paint particles leaving edge of bell on way to its destination: the miniature cars.

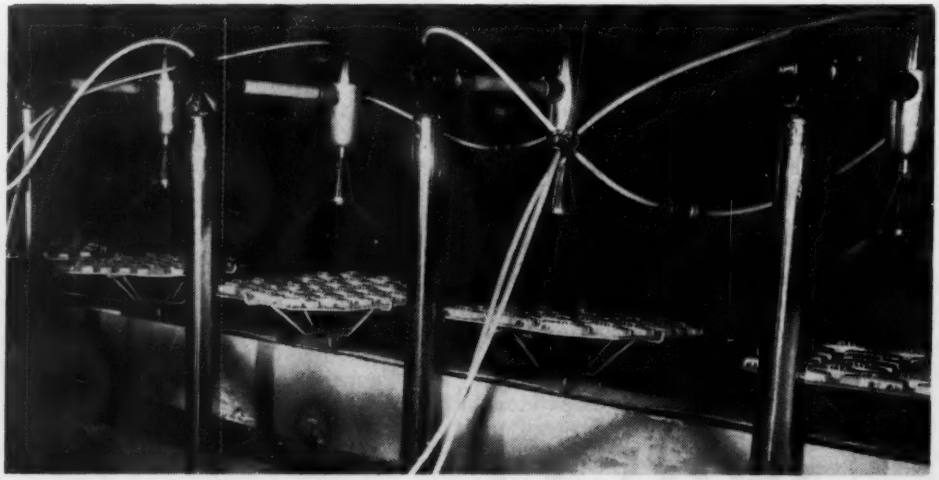

Fig. 3—Expanded metal trays holding toys rotate as they move through the electrostatic booth.

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Fig. 5—Parts enter baking oven at right, leave on left. (Photos courtesy Ransburg Electro-Coating Corp., Indianapolis, Indiana.)

After painting operations are completed the trays travel to an oven where parts bake at 325 deg. F. for 5½ minutes.

The finished parts are inspected and trucked to an assembly line,

A Survey of Paint Application Methods

A series of articles on painting methods have been reprinted as a 64-page booklet.

Chapters in the report cover: 1) Use of the Spray Gun. 2) Conveyorized Spray Finishing; Automatic Spraying; Electrostatic Spray Painting. 3) Hot Spray; Airless Spraying; Steam Spray Painting; Spraying Catalyst Coatings. 4) Dipping Methods; Flow Coating. 5) Roller Coating; Tumble and Centrifugal Painting; Silk Screening; Aerosol Painting.

Reprints of *A Survey of Paint Application Methods* are available at 50 cents a copy. Write to PRODUCTS FINISHING, 431 Main St., Cincinnati 2, Ohio.

where wheels and axles are put on the toys. Toys ready for sale are boxed and packaged.

Trays used to carry the toys through the finishing operations are stripped in hot caustic once a day.

★ ★ ★

Washing a Space Ship? Use Deionized Water

As a prelude to count-down, the Atlas ICBM and other satellite launcher stages are thoroughly bathed in deionized water as they stand on their launching pads.

The U. S. Air Force Missile Test Center at Cape Canaveral, Florida has found it necessary to clean the missile skin in this way to prevent local "hot spot" corrosion while the bird is speeding through the atmosphere, and to eliminate the unwanted weight of possible residues.

The deionized water leaves no scums or residues when it evaporates. To provide this supply of deionized water, Hungerford and Terry, Inc., of Clayton, N. J., installed six ion exchange units, stocked them with nearly 100 cubic feet of Amberlite ion exchange resins made by Rohm & Haas Company of Philadelphia. The deionizing units are about 400 yards from the launching pads.

Ion exchange resins remove impurities simply by exchanging electrically charged particles in solution (ions), for different particles of like charge. Two resins are needed to deionize water; a strongly acidic resin (Amberlite IR-120 is used at Canaveral) and a strongly basic resin (Amberlite IRA-400 in this case).

As water passes through the tank containing resin beads, the acidic resin removes calcium, magnesium, and other "metallic" ions and replaces them with hydrogen ions. The basic resin, on the other hand,

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1959 PRODUCTS FINISHING DIRECTORY

Buyer's Guide for

Equipment, Materials and Processes Used in the Finishing Industry—

Electroplating

Painting

Vacuum Metallizing

Porcelain Enameling

Prior to count-down, this Air Force Atlas ICBM will be washed with deionized water to remove all traces of foreign particles from the skin of the missile. (Photo courtesy U. S. Air Force and Rohm & Haas Company)

removes sulfate, chloride, and other anions, and hydroxyl ions are exchanged in their place. The mineral salts are thus removed from the water, while the hydrogen ions and hydroxyl ions unite to form more water.

In this way the water is freed of all ionizable impurities.

★ ★ ★

Rust Ratings: Comparative Corrosion in 523 U.S. Cities

Corrosion occurs more rapidly in some places. Salt, humidity, rainfall, sunlight and corrosive gases vary from city to city in the U.S., causing rates of corrosion to vary from three years, the fastest rate for a standard, uncoated panel, to more than 15 years at the slowest rate.

It takes three years in Buffalo and Rochester, N. Y.; Erie, Pa.; and Miami, Fla. Slowest rust rate, more than 15 years, is in Tucson, Ariz.; Roswell and Santa Fe, N. M. In all major industrial centers the rust rate is under four years.

This was disclosed in a "Rust Index" of the United States recently published by the Rust-Oleum Corporation, Evanston, Ill. The Index, the result of a 25-year research program, lists the 523 cities of the country with a population of more than 10,000 and the comparative rust rate for each city.

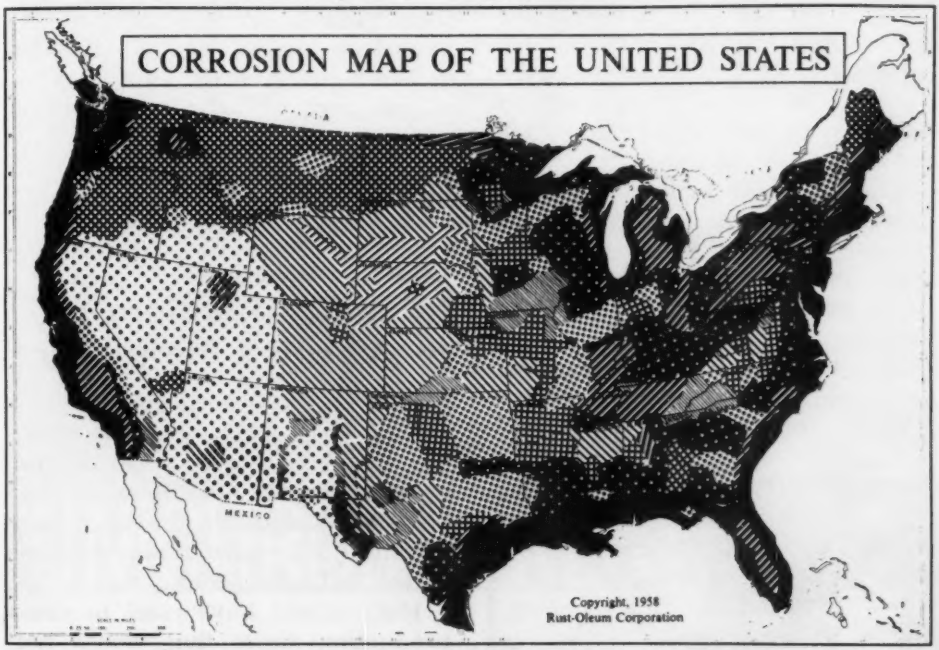
The index was compiled in a mammoth research program, in which dated and uncoated steel panels were left exposed at industrial sites throughout the country.

THE 50 LEADING CITIES IN RUST LOSS

City	Rust Index Years-Months
1. Buffalo, N. Y.	3.00
2. Erie, Pa.	3.00
3. Miami, Fla.	3.00
4. Rochester, N. Y.	3.00
5. Mobile, Ala.	3.01
6. New Orleans, La.	3.01
7. Pensacola, Fla.	3.01
8. Pittsburgh, Pa.	3.01
9. Baton Rouge, La.	3.02
10. Lafayette, La.	3.02
11. Los Angeles, Calif.	3.02
12. Norfolk, Va.	3.02
13. Norristown, Pa.	3.02
14. Atlanta, Ga.	3.03
15. Atlantic City, N. J.	3.03
16. Baltimore, Md.	3.03
17. Cleveland, O.	3.03
18. Cleveland Heights, O.	3.03
19. East Cleveland, O.	3.03
20. Elyria, O.	3.03
21. Euclid, O.	3.03
22. Houston, Tex.	3.03
23. Johnstown, Pa.	3.03
24. Shaker Heights, O.	3.03
25. Youngstown, O.	3.03
26. Jacksonville, Fla.	3.04
27. Portland, Ore.	3.04
28. Providence, R. I.	3.04
29. Chicago, Ill.	3.05
30. Cicero, Ill.	3.05
31. Lakewood, O.	3.05
32. Lewiston, Me.	3.05
33. Milwaukee, Wis.	3.05
34. Portland, Me.	3.05
35. Seattle, Wash.	3.05
36. Sharon, Pa.	3.05
37. Wilkinsburg, Pa.	3.05
38. Bayonne, N. J.	3.06
39. Bellingham, Wash.	3.06
40. Galveston, Tex.	3.06
41. Lackawanna, N. Y.	3.06
42. Lake Charles, La.	3.06
43. Lockport, N. Y.	3.06
44. Manitowoc, Wis.	3.06
45. Newport, R. I.	3.06
46. Newport News, Va.	3.06
47. New York, N. Y.	3.06
48. Portsmouth, Va.	3.06
49. Reading, Pa.	3.06
50. Warwick, R. I.	3.06

The panels were of 28-gauge, low-carbon cold-rolled steel. Thousands of panels were dated and left exposed by Rust-Oleum representatives during the past quarter of a century. Periodic examination of the panels provided data for the Rust Index. The criterion for the Index was the time it took for the uncoated steel panel to rust to a severe degree.

Of the 523 cities listed, 221, or 42 per cent, were indexed as Class I, meaning that uncoated test panels there rusted in less than four years. Class I rust cities include every major industrial area and most of the nation's secondary industrial centers. In Class II, where test panels rusted in four to five years, are 95 cities. The 316 cities in Classes I and II comprise 60 per cent of the nation's cities with population over 10,000.



Legend

The number of years and months required to corrode an uncoated 28-gauge steel test panel to a severe degree

YEARS AND MONTHS	COLOR CODE	YEARS AND MONTHS	COLOR CODE	YEARS AND MONTHS	COLOR CODE
3.00 – 3.11		6.00 – 6.11		9.00 – 9.11	
4.00 – 4.11		7.00 – 7.11		10.00 – 14.11	
5.00 – 5.11		8.00 – 8.11		15.00 +	

Map shows the rates at which rust proceeds in different parts of the country. Data was compiled in a 25-year research program. Thousands of dated and uncoated test panels of 28-gauge steel were left exposed at industrial sites throughout the country to establish the rate of rust in each locality. (Photograph courtesy Rust-Oleum Corporation)

Infrared Oven Speeds Production for Sign Company

One of the problems in the sign industry — finding enough shop space to store painted signs until they are dry—has been solved by Heath and Company, Los Angeles sign manufacturer.

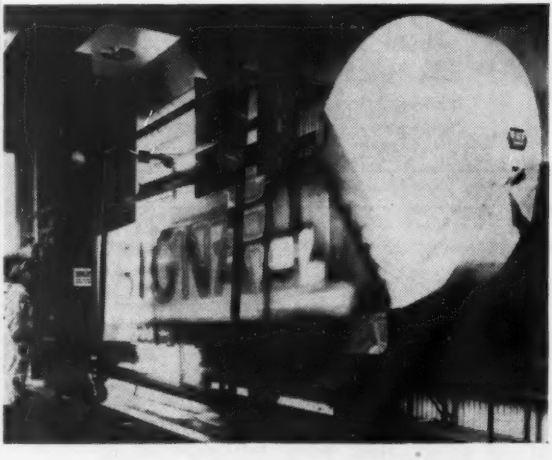
The company uses a Fostoria vertical infrared oven to speed drying. Within minutes after multicolor signs leave the infrared oven, they can be loaded on a truck for delivery—or they can be moved to the plant's storage yard.

The speed-up in drying time is particularly important since the company makes about 60 colors available to its customers—and as many as 12 colors may be used on a single sign. Each color must dry thoroughly before a succeeding color is applied.

Other problems that came with the extended period required for air drying, such as that of dust settling on "wet" signs, have also been eliminated.

Heath and Company's present finishing system includes a spray booth and a drag-chain conveyor at floor level. The latter pulls sign holders through the oven at various speeds.

Since the company's line of products includes small units as well as signs ranging up to 80 square feet in surface area on one side, the oven is wired by zone to permit use of all or part of its total radiation surface.



Sign made by Heath and Company moves through recently installed infrared oven. (Photo courtesy Fostoria Pressed Steel Co.)

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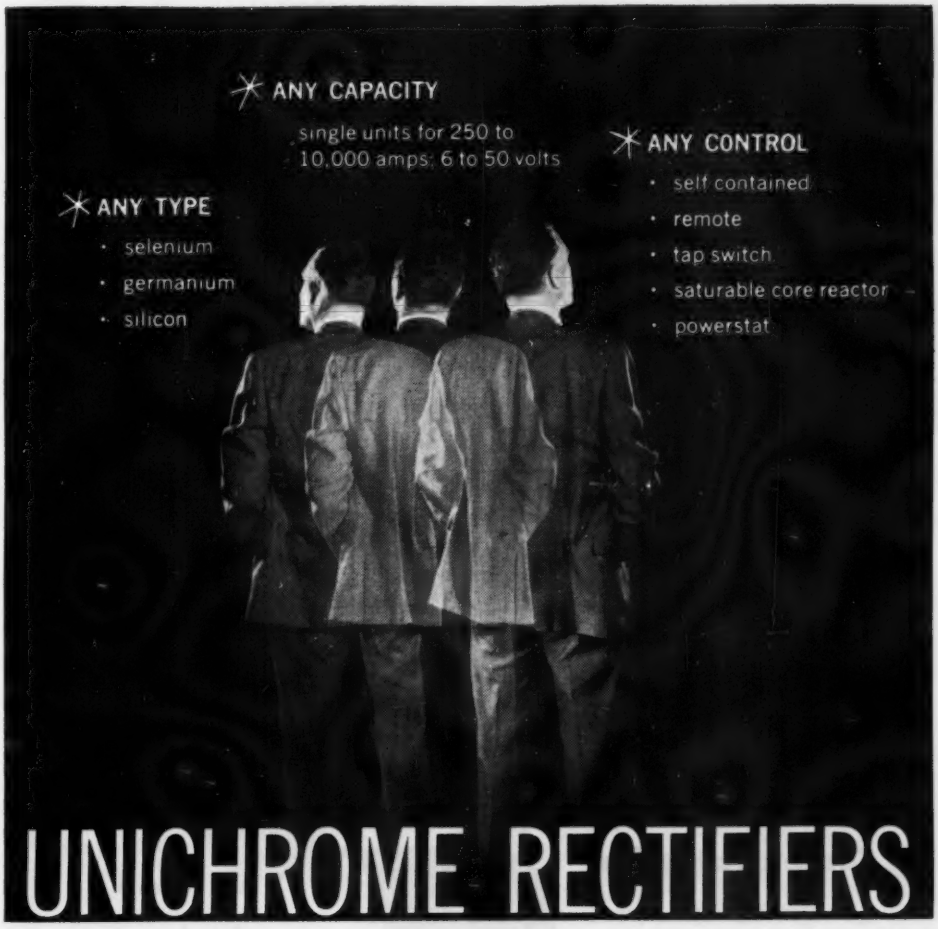
Cold Traps Lick Humidity Problem for Vacuum Metallizer

A two-stage refrigerator that is able to keep a large load at minus 150 deg. F. has solved a wet-weather problem for Kent Plastics Corporation, Evansville, Indiana, manufacturer of metallized plastic nameplates and medallions.

Hot, humid days used to cause production times that would normally be in the 10-minute range to stretch out to as long as 30 minutes. And reject rates also soared on such days. Cause of the difficulty: a film of water on the surface of every part introduced into the metallizing machines immediately evaporated and expanded as the metallizing units began the pump-down cycle. Pumps had much more work to do, and it took longer. Worst of all, remaining water molecules on the sur-



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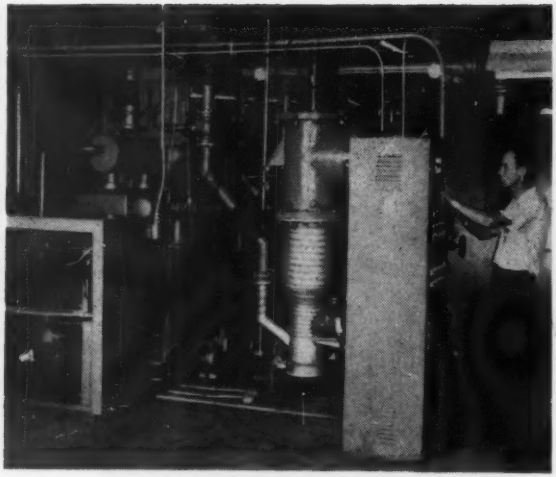

Harris mechanically refrigerated cold trap (left) on NRC vacuum metallizing machine reduces pumping time in hot, humid weather, cuts reject rate, by freezing out water before it reaches diffusion pump. (Photograph courtesy Harris Refrigeration Company)

face of parts would cause blemishes in the coating.

NRC Equipment Corporation solved the problem by installing a Harris two-stage refrigerator that refrigerates a cold trap placed over the diffusion pumps. The traps freeze out water before it reaches the diffusion pumps, thereby reducing the load on these pumps and allowing them to do their job almost as fast as on a dry day. Reject rates have fallen with the cycle time.

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Simple Stop-Off

A peelable plastic coating used as a stop-off on parts that are to be partially plated is helping to speed up a selective plating procedure at United Platers, Inc., Detroit.

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Whether Your

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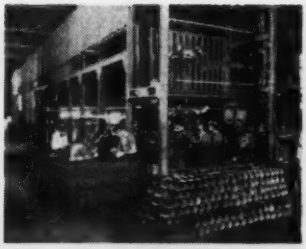

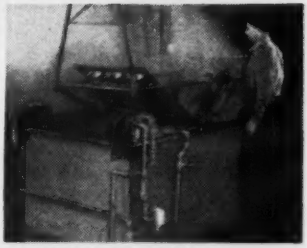

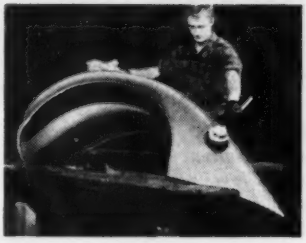

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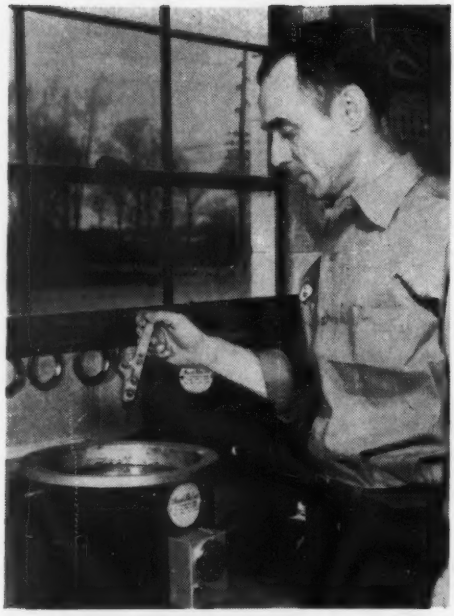

Fig. 1 — Operator dips wing-control lever into molten butyrate plastic. Coating dries in a few seconds, is an effective mask for use in partial plating of aircraft parts.

Fig. 2—After plating coating is stripped away easily. Used coating is rinsed and returned to the melting pot for reuse. (Photos courtesy Eastman Chemical Products Co., Inc.)

United has a job that involves selective plating of an airplane wing-control lever. Specifications call for the part to be cadmium plated except for six bearing surfaces. The bearing surfaces must be lead plated.

United masks with a butyrate peelable plastic coating. Parts are dipped in the molten plastic and withdrawn a few minutes later. The plastic coating solidifies within 60 seconds, is then trimmed and peeled off the areas to be plated. After plating, the coating is stripped, washed and returned to the melt tank for re-use.

In the case of the wing-control lever the bearing holes are plugged with the butyrate plastic before cadmium plating. After cadmium plating these plugs are removed and the entire part is coated with the peelable coating. Then the coating is removed from the holes and the part is sent to the lead plating tank. Removal of the coating from the part after plating the bearing surfaces with lead completes the process.

The coating used by United was made by Seal-Peel, Inc., Royal Oak, Mich., using butyrate resin supplied by Eastman Chemical Products, Inc.

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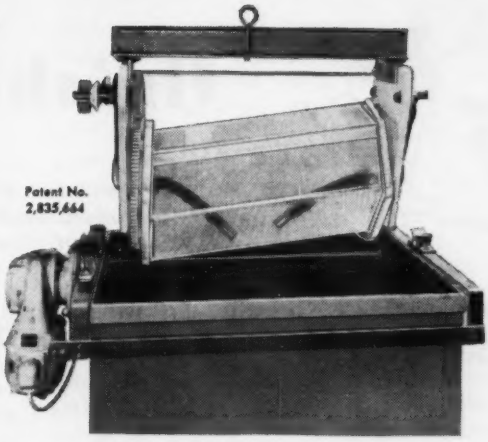


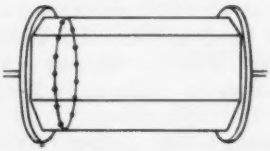
How Oscillating Cylinders Improve Plating and Cut Costs!

Double Oscillating Cylinders rock as they revolve. The Rocking Action adds *side motion — moves the work back and forth across the cylinder from end to end in a progressive figure 8 mixing pattern as shown by the diagrams below.*

The improved mixing action combined with movement of the pieces across the cylinder *exposes all sides of every piece equally to plating current for uniform distribution of plate.*

Uniform Distribution of Plate

Conventional Cylinder



As the cylinder revolves the marked piece follows a fixed path round and round the inside wall.

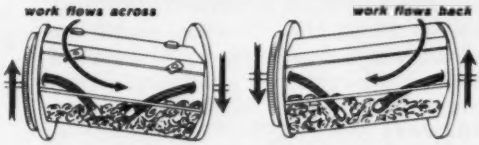
Double Oscillating Cylinder

The marked piece shows the progressive figure 8 mixing action added by double oscillation. The work pours back and forth as well as round and round.

Individual pieces move from end to end of the cylinder. They roll, twist and turn. None remains buried.

All sides of every piece are uniformly exposed to plating current. *That's why Double Oscillating Cylinders give you uniform plating deposit not obtainable with conventional cylinders, in less plating time and at reduced plating cost.*

Oscillating Cylinders Rock as they Roll



Uniform Distribution of plate produces a specified thickness in less time

Why! Because you do not have to overplate most of the work to get the specified thickness on all faces of all pieces — You have improved plating quality with less under plating and less over plating — avoid complaints, eliminate rejects, stripping and re-running.

Results on hard-to-plate work demonstrate the difference

The triple mixing action of Double Oscillating Cylinders has revolutionized the plating of washers, flat pieces and other shapes that stick together, including much work that otherwise had to be wired. This same mixing action, *by providing uniform exposure to plating current,* assures more uniform deposit on all barrel plating work.

Interchangeable with other makes

BELKE Double Oscillating Cylinders can be furnished for use in the same tanks with conventional cylinders of other makes. Whether you need new plating barrels or replacement cylinders you can have the full advantage of double oscillation and at no extra cost.

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finishing clinic

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Vapor Blast Cleaning Equipment

Question: *Our development laboratories are interested in obtaining information on vapor blast cleaning equipment.*

I would appreciate your listing manufacturers of such equipment and any articles about blast cleaning published in your magazine in the past few years.

R. D.

Answer: We are enclosing an article published in the February, 1957 issue of PRODUCTS FINISHING—"Facts About Vapor Blasting."

Manufacturers of vapor blast cleaning equipment are listed on page 14 of the PRODUCTS FINISHING DIRECTORY.

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Plastisol Coatings

Question: *We are interested in plastisols and would appreciate your sending us reprints of your articles entitled "Plastisol Coating of Wire Products," and "Plastisol Coating of Plating Racks and Tanks—A Job for Specialists."*

We would also like to have names of suppliers of this material.

G. W. N.

Answer: We are forwarding the reprints you requested. Manufacturers of plastisol coatings are listed on pages 131 and 132 of the PRODUCTS FINISHING DIRECTORY.

Removal of Flux Residue

Question: *I am looking for a machine to use with Freon-alcohol solvent to remove flux residue from printed wiring boards. This equipment should include a spraying mechanism and a still for cleaning the solvent. The still should have a capacity of three g.p.h.*

I would appreciate it if you would give names of possible suppliers of this equipment.

W. J.

Answer: We suggest that you contact the manufacturers listed under the classification "Degreasers" on page 69 of the PRODUCTS FINISHING DIRECTORY. Some of the manufacturers of "Cleaning and/or Phosphatizing Machinery" on page 56, or those listed under "Washing Machines, spray mask" on page 195, might be able to supply the type of machine that you need.

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Preventing Silver Tarnish

Question: *We silver plate on Carpenter low-expansion "42." The analysis of this alloy is as follows: carbon —0.10 per cent maximum; manganese —0.50 per cent maximum; silicon—0.25 per cent maximum; nickel—42.00 per cent maximum; iron—balance.*

The procedure that we follow after thorough cleaning is as follows: copper plate 0.0002 inch, with a silver strike and a silver plate of 0.0005 inch. The parts are subsequently coated with a clear lacquer.

After several days the silver has marked discoloration, despite the lacquer coating applied. We have also attempted passivating the silver deposited using a potassium nitrate and potassium dichromate solution operated cathodically for one to five minutes at a voltage of two to three volts. This was followed by a clear lacquer coating. Approximately ten days later the tarnishing problem was again present.

Any information and assistance that you have to offer will be deeply appreciated.

V. F. S.

Answer: To prevent the tarnishing of clear lacquered silver plate, it is necessary to rinse the silver plate thoroughly to be sure to remove all cyanides from the surface. You will find a series of hot and cold rinses, one of which may contain a wetting agent, helpful for this purpose.

You may find it helpful to warm the silver plated objects before the lacquer is applied. You may also wish to use a tack cloth on the silver plated parts prior to lacquering.

Some finishers apply lacquer hot. Thus, if the silver plated parts are warmed, and the lacquer is sprayed hot, you may guard against moisture under the film, which is one source of tarnish.

Finally, the type of clear lacquer or clear finish is important. Manufacturers of lacquers are listed in the PRODUCTS FINISHING DIRECTORY beginning on page 98. Manufacturers of epoxy-based coatings (which you might find useful) are listed beginning on page 122.

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Black Spots on Copper Plated Steel

Question: *We have a problem with black spots appearing on copper plate. Steel parts are plated with 0.0006 inch copper; dipped in an oxide; the oxide then polished off, leaving only highlights; finally, a clear air-dry lacquer is sprayed on the part.*

We do not know exactly the length of time required for the spots to appear, but some have been discovered between one and four months after being lacquered.

We would appreciate any information you may have toward the solution of this problem.

R. M. D.

Answer: Some of the factors involved in the formation of these undesirable black spots are listed in the article "Factors Influencing the Tarnishing of Silver Plated Products" published in the October, 1955 issue of PRODUCTS FINISHING. Although the article mentions the tarnishing of silver, copper plated parts exhibit many of the same characteristics.

There are two principal points by which this situation can be corrected:

1) It is essential that the work be rinsed thoroughly and completely after cyanide copper plating. A number of plating supply companies manufacture rinse aids to be used in the final rinse water to secure improved rinsing. Companies manufacturing these products are listed in the PRODUCTS FINISHING DIRECTORY beginning on page 164.

2) The clear lacquer which is sprayed on the rinsed and polished parts is most important since all organic coatings are not the same in their characteristics. Some of these properties of clear coatings are discussed in the July issue of PRODUCTS FINISHING on page 35 and we are sending tear sheets of that discussion.

The companies listed in the PRODUCTS FINISHING DIRECTORY under the heading "Lacquers" beginning on page 98 can be of assistance to you in recommending materials which will solve your problem.

Deadline News . . .

ALUMINUM PAINT ADDITIVE...

Aluminum paints with alkyds and high-acid-number varnishes as vehicles retain stability in one-package formulations by using an additive just announced by the Aluminum Company of America.

Trouble with alkyds and high-acid vehicles as aluminum vehicles has been instability -- they destroyed "leafing" action of the aluminum pigments in a short time. Aluminum paints with such vehicles could be used only by mixing at point of application. New additive (Alcoa Stabilizer No. 5) eliminates deleafing, makes possible ready-mixed formulations (with acid numbers up to 28) that will remain stable.

Durability of paints is also upped, according to Alcoa, with only a few ounces per gallon needed for "doubling of corrosion resistance in salt water and salt spray."

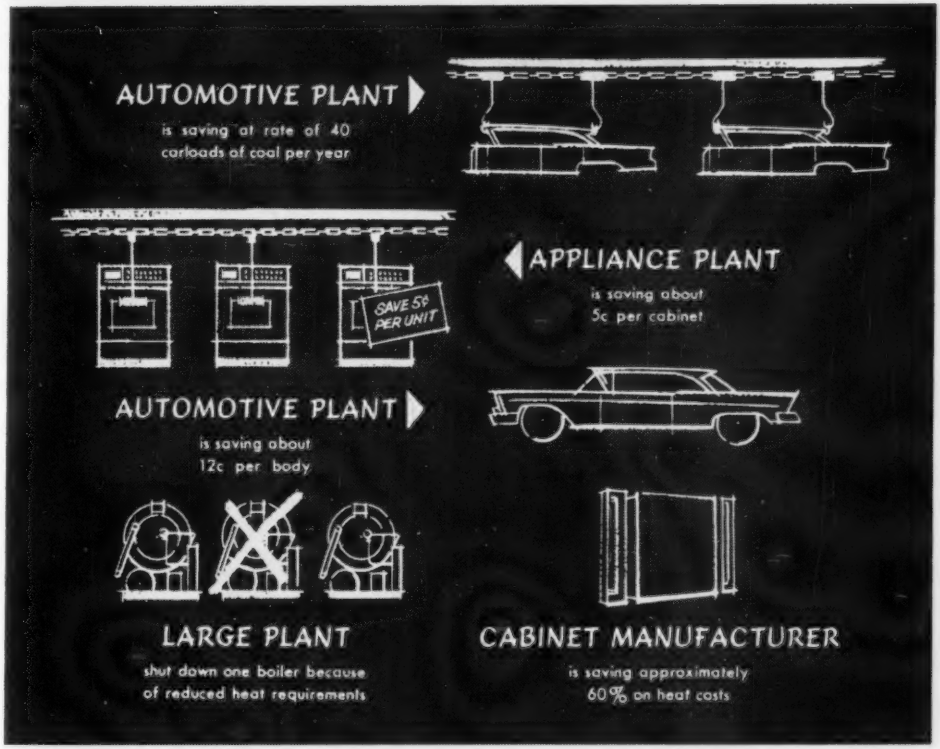
NO-WRINKLE VARNISHES...

Techniques for producing high-solids phenolic varnishes which can be applied "at least at normal thickness" without fear of wrinkling have been discovered by Union Carbide Plastics Co., Div. of Union Carbide Corporation. New method, which makes possible heavy dry film in a single application, is based on cold-mix technique coupled with new combination of driers.

Work now in progress holds promise for metal primers and freight-car finishes that can be applied in dry films 4-5 mils thick, says Union Carbide.

PAINT HEATER WITH DIRECT HEATER ELEMENT...

Paint heater just announced by Binks Manufacturing Co., warms paint by circulating it through passageways that are spaced radially about electric heater element. Paint tract consists of 22 long slots or passageways (27 linear feet) equally spaced around outside diameter of an aluminum block. Advantages of this design, Binks says, are more efficient heat transfer; less danger of "hot spots" that bake the paint onto the tract; reduced clogging troubles. Unit's 1500-watt heating element heats 30 ounces per minute to maximum temperature of 160 deg. F.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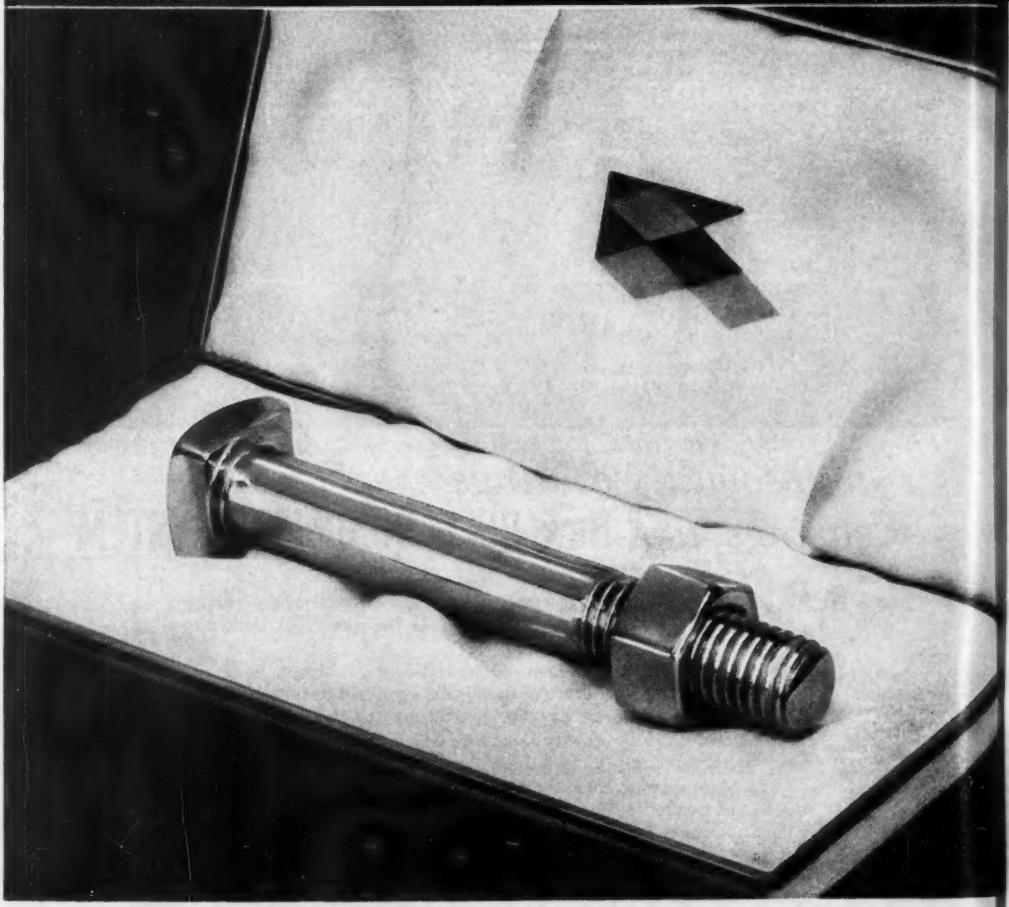

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Chemical and Electrochemical Processes, Anodes, Rectifiers, Equipment and Supplies For Metal Finishing

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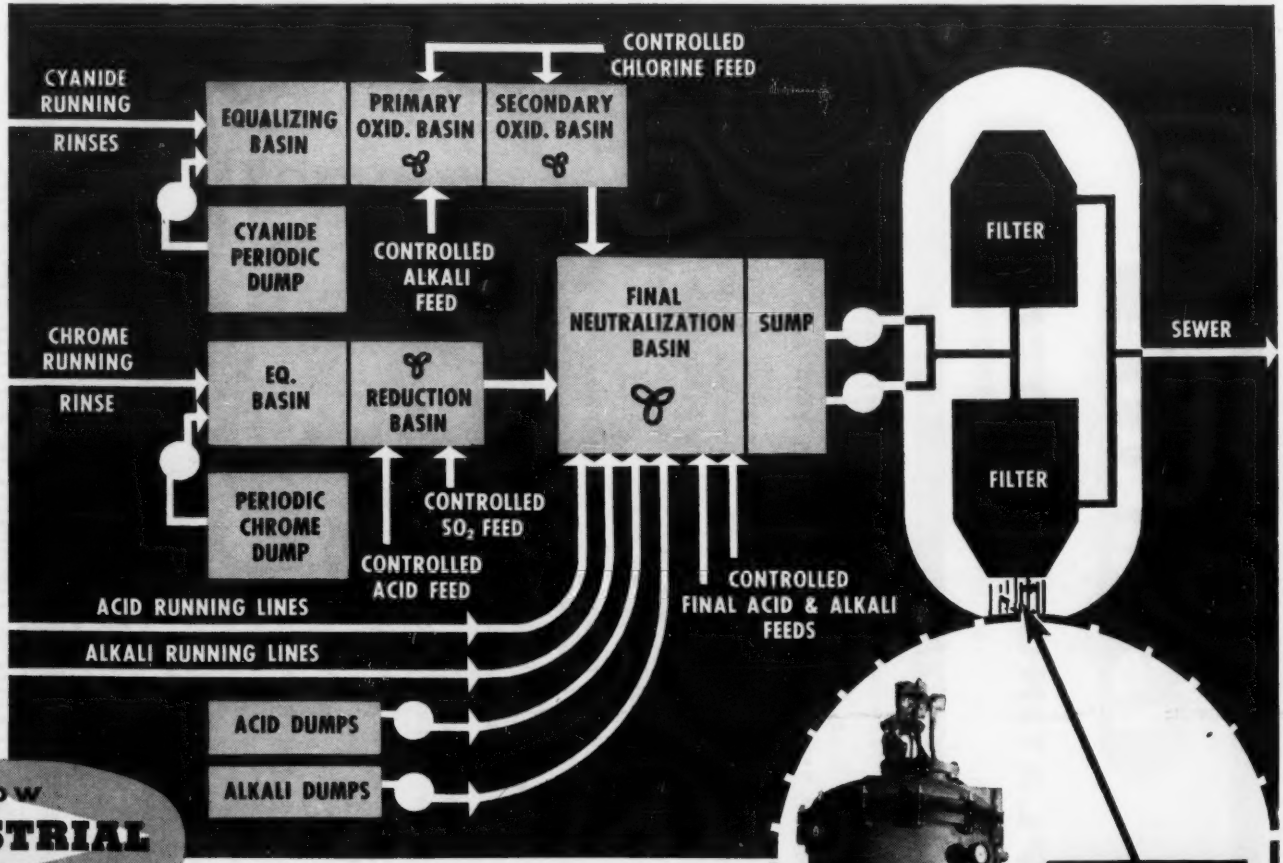


HOW **INDUSTRIAL** ENGINEERING PAYS OFF...

Cutting Costs on Plating Waste Disposal

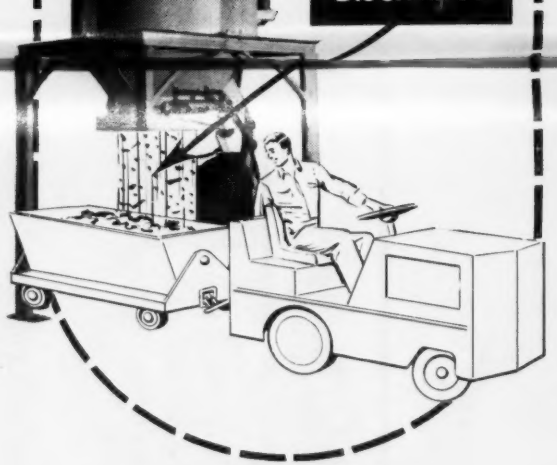
A large midwest plant needed an efficient centralized system for

Cutting Costs On Plating Waste Disposal

A large midwest plant needed an efficient centralized system for disposal of corrosive wastes from several plating lines.

The answer to their problem was the INDUSTRIAL *engineered system* diagrammed above. This system provides a central basin for neutralization of all the acid, alkali, cyanide and chrome wastes delivered from rinsing operations. Only small amounts of chemicals are added to precipitate the dissolved metals for separation by filtration. The two compact INDUSTRIAL filters extract the solids and discharge a neutral non-toxic effluent to the city sewage system.

The end results reduced equipment costs by one-half—two push-button Vertical Leaf Filters *replace* expensive clarifier mechanisms, sludge pumps and vacuum filter! . . . 90% LESS SPACE required for entire system! . . . SIMPLE INSTALLATION—no excavation or complex concrete work! . . . DRY CAKE WASTE DISPOSAL—discharged by mechanical shakers directly from filters into trucks!



SIMPLE, FAST CAKE DISPOSAL

There's no mess, no time lost with this rapid-cleaning INDUSTRIAL filter. A simple mechanical shaker discharges the *dry* cake through the convenient bottom outlet—directly into a waiting disposal truck that can be driven away immediately.

INDUSTRIAL

INDUSTRIAL FILTER & PUMP MFG. COMPANY
5904 Ogden Avenue, Chicago 50, Illinois

Call or write INDUSTRIAL to find out how an engineered system like this can solve your specific plating waste and recovery problems.

P-358

PRESSURE FILTERS ◆ ION & HEAT EXCHANGERS ◆ WASTE-TREATING EQUIPMENT

For more data circle 342 on Postpaid Card

Page 82

New Equipment, Materials, Processes

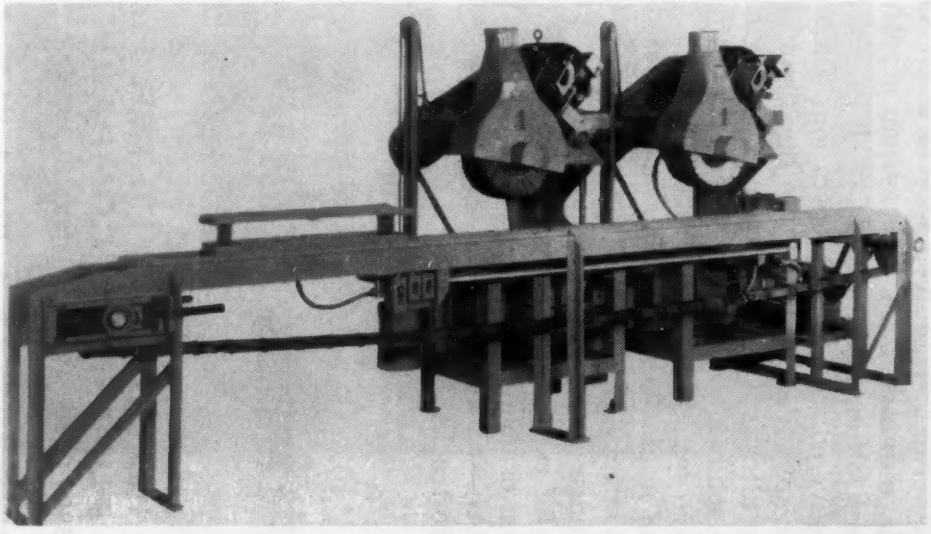
Polishing, Buffing, Degreasing, Cleaning, Barrel Finishing, Plating, Anodizing, Phosphatizing, Baking, Vacuum Metallizing, Chromate Coating, Paint Finishing, Waste Treatment

Automatic Reciprocating Buffing Machine

A reciprocating buffing machine manufactured by Wilson Buffing Chuck and Machine Co., can be used as an automatic, conveyorized, high-production unit, or for manual operation when limited quantities of parts are being buffed.

When used as an automatic unit, the machine's conveyor runs in one direction continuously, carrying fixture-mounted parts beneath the required number of buffing heads.

When used as a manually operated unit, a single item can be buffed by attaching it to a fixture and running the conveyor forward and backward



Wilson Automatic Reciprocating Buffing Machine: for conveyorized or manual operation

ANOTHER NORTHWEST FIRST!

a completely NEW concept in metal cleaning!

- An easy handling liquid.
- Effective on *all* metals.
- Requires NO special tanks or equipment.
- A completely organic product.
- Won't injure rack coatings or work finish.
- Simple positive control.

The name NORTHWEST means first with the best!

Alkalume LC-1 is a specially developed immersion-type cleaner for removal of buffing compounds and soil from all metals, prior to plating or anodizing. ● It is non-solvent, non-alkaline and not an emulsion. It has the desirable penetrating properties of both alkali and solvent yet affords complete protection for the surface finish. ● Alkalume LC-1 is economical, non-toxic and non-volatile, offering long service life and no disposal problem. ● Complete details upon request.

LO HI pH

NORTHWEST CHEMICAL CO.

9310 ROSELAWN DETROIT 4, MICH.

For more data circle 326 on Postpaid Card

under the buffing heads. Extrusions and mouldings of almost any length may be buffed on this machine by providing the necessary length of conveyor.

The machine will handle parts up to four feet in length when run as a continuous, conveyorized unit.

Conveyors are available for handling any width from six to 12 inches. The conveyors are driven by brake motors, which allow quick stopping and reversing, and have variable-speed drive to permit varying the conveyor speed to suit the part being buffed.

Buffing heads are full-floating type. Balance weights are used to supply the proper pressure. Swivel adjustment at the base of each head permits cross buffing wherever desired.

Machines are completely equipped with all motors and accessories, and are ready for use.

Manufacturer: Wilson Buffing Chuck & Machine Co., 22730 Dequindre, Warren, Michigan.

For more data circle 1 on Reader Service Card

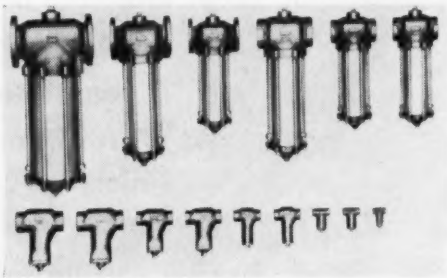
★ ★ ★

Line Strainers

Spraying Systems Company's line strainers are now available in a greater number of different capacities. In addition, the recently introduced line includes strainers in stainless steel as well as brass and cast iron.

Strainers are now supplied in a complete range of threaded pipe connection sizes from ¼ to 4 inches, and with flanged connections for 3-inch, 4-inch and 6-inch pipe sizes.

Screen areas for each size are large.



Spraying Systems' Line Strainers: more sizes, more materials of construction

Each strainer can take up to 75 per cent blocking with less than ½ lb. pressure drop under normal flow conditions, the manufacturer says.

Dual-screen design gives a heavy outside screen to protect against surge and bursting and a fine-mesh inside screen for straining.

Screens are supported top and bottom by flange collars to provide seal fit and rigidity. Also included are special

THIS FULLY ADJUSTABLE 36"
ALL-TITANIUM
ANODIZING RACK

WILL POSITIVELY GIVE YOU
Improved Quality
Increased Capacity
Lower Costs
FOR ONLY $77.50 F.O.B. FACTORY
ORDER TODAY
Satisfaction Guaranteed
Or Write for Catalog PFA
ANODIZING RACK DIVISION
SERVICE SCREW PRODUCTS CO.
131 N. GREEN ST. CHICAGO 7, ILLINOIS

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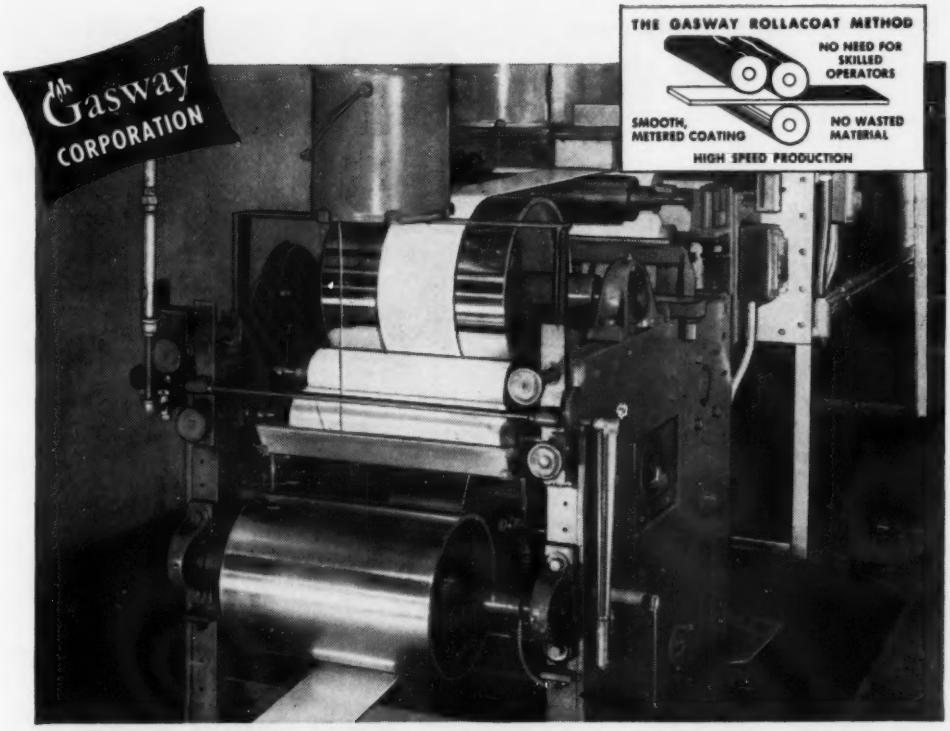


This manufacturer produces faster . . . saves 67% on paint . . . gets more uniform finish . . . with GASWAY ROLLACOATING

Here's how KoolVent Metal Awning Co. is controlling manufacturing costs and getting a better product, with its Gasway Continuous Strip Coating Line.

For example, KoolVent estimates that *paint consumption is approximately 33%* of what it was before the company installed its coating line. *850 square feet of aluminum is covered with one gallon of paint!* In addition to these savings, *KoolVent can and does coat an average of 8500 pounds of aluminum stock per 8 hour shift.* This is possible because the Gasway line produces 75 feet of enameled and baked strip per minute.

The manufacturing advantages don't stop with the painting either. KoolVent roll-forms its awning parts after coating. This is the last step in the manufacture of the parts. Assembly of the awning is the only thing left to do. The only handling done during manufacture is handling of coiled stock. The automation in finishing and forming operations increases efficiency, and also cuts costs significantly. *Get all the details today!*

INFORMATION AVAILABLE—Gasway will send you full details on rollacoating at no obligation. Whether you have tremendous production rates or intermittent manufacturing, there's a Gasway coater to handle the job. Send for the whole story.

Gasway
CORPORATION
6459 North Ravenswood Ave.
Chicago 16, Illinois

LOOK TO GASWAY FOR EFFICIENT, HIGH PRODUCTION COATING OF STRIP, SHEET OR PANELS

For more data circle 344 on Postpaid Card

line strainers for high-pressure lines up to 5,000 p.s.i.

For complete information write for Line Strainer Bulletin 94.

Manufacturer: Spraying Systems Co., 3229 Randolph St., Bellwood, Ill.

For more data circle 2 on Reader Service Card

★ ★ ★

Paint-Test Panels

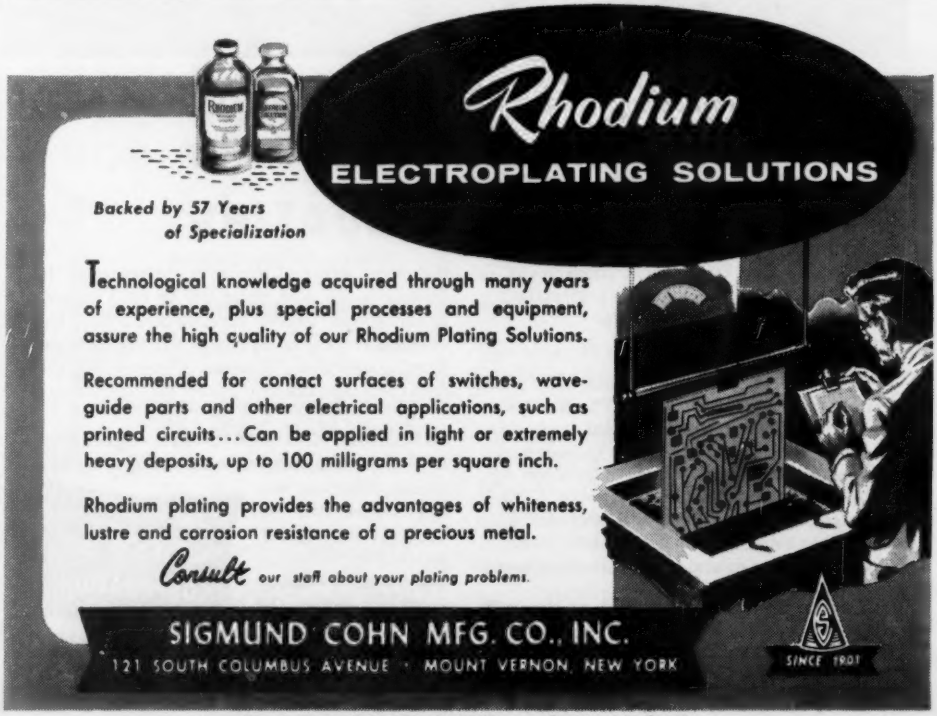
Test panels manufactured by Parker Rust Proof Co. are available with any of 85 different Bonderite treatments.

These metal panels are used for evaluating paints. The paint being tested is sprayed on the panel (or dip-coated, roller coated, and so on).

By comparing the coated standard panels with other coated panels in various tests, paint samples can be evaluated objectively.

The test panels are useful because they eliminate one variable. They are manufactured so carefully that the difference from one panel to another is not a factor.

Parker Phosphatized Panels: accurate tests


Rhodium
ELECTROPLATING SOLUTIONS
Backed by 57 Years of Specialization
Technological knowledge acquired through many years of experience, plus special processes and equipment, assure the high quality of our Rhodium Plating Solutions.
Recommended for contact surfaces of switches, waveguide parts and other electrical applications, such as printed circuits...Can be applied in light or extremely heavy deposits, up to 100 milligrams per square inch.
Rhodium plating provides the advantages of whiteness, lustre and corrosion resistance of a precious metal.
Consult our staff about your plating problems.
SIGMUND COHN MFG. CO., INC.
121 SOUTH COLUMBUS AVENUE · MOUNT VERNON, NEW YORK
SINCE 1901

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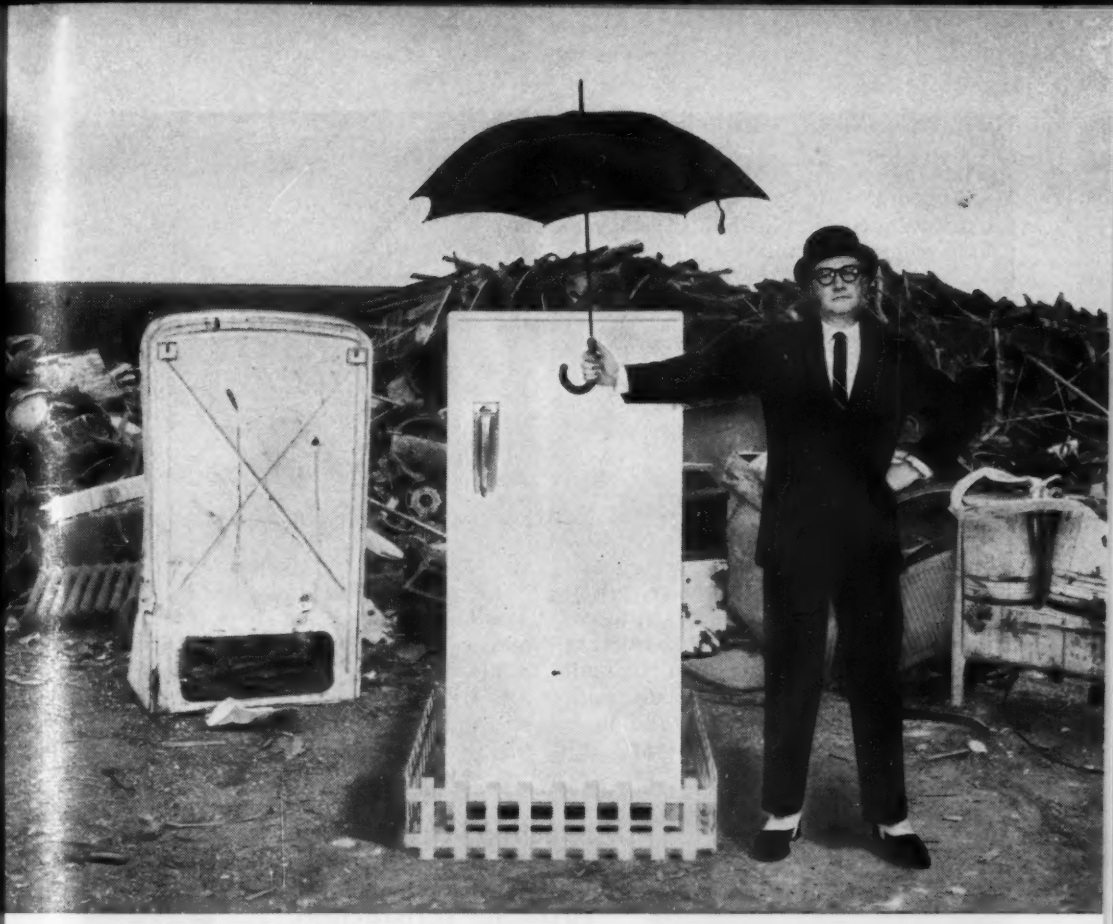


THERE'S A BETTER WAY... to protect your products!

Corrosion—deadly enemy of ordinary product finishes—more than meets its match in the *real umbrella protection* provided by Glidden finishes.

Whatever conditions your products face—corrosion, heat, cold, humidity, impact, staining, abrasion, fading—Glidden finishes are custom-formulated to provide the special protection they need. Equally important, Glidden Technical Service is yours for the asking, and includes analyses of your finishing problems by experienced, trained technicians.

You should have both—Glidden Finishes and Glidden Technical Service—for *real umbrella protection,* whatever your product, process or problem.

QUALITY Glidden PRODUCTS

FINISHES FOR EVERY PRODUCT

The Glidden Company
INDUSTRIAL PAINT DIVISION
900 Union Commerce Bldg., Cleveland 14, Ohio

For more data circle 346 on Postpaid Card

"THE GLIDDEN UMBRELLA" of protection combines comprehensive technical service and custom-formulation of product finishes for all industry.

The phosphate coated panels are quality controlled for flatness, surface finish, weight of phosphate coating. Cleaning and phosphate coating processes used for the panels are kept under close surveillance to assure consistent results.

Manufacturer: Parker Rust Proof Co., 2172 E. Milwaukee Ave., Detroit 11, Mich.

For more data circle **3** on Reader Service Card

★ ★ ★

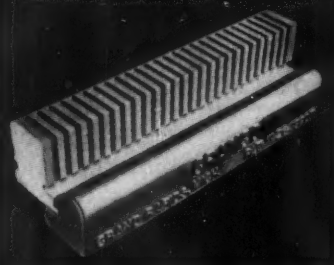
Barrel Finishing Media

Description: Barrel finishing media produced in various specific shapes are made of pressed abrasive grain. Called Multi-Forms, these abrasive shapes are said to speed deburring and grinding operations in barrel processes. Multi-Forms eliminate peening or rolling-over of burrs and have long life, the manufacturer states.

Multi-Forms: precision barrel finishing media

The recently introduced media are available in two basic shapes, triangles and cylinders. Other shapes can be made for specific uses. Three types are being made: Type A, which is straight aluminum oxide; Type B, a blend of aluminum oxide and silicon

GRANCO



Granco Irradiant Grid Gas Burner

Your products will glow when cured and dried with Granco flameless gas burner systems.

GRANCO INC.

...Specializing in designing and building to entire customer satisfaction . . .

Granco builds radiant ovens, dryers and furnaces.

Granco builds industrial washers and water wash spray booths.

Granco has original ideas, initiative, ability to design and install any size or style system, whether it is convection, radiation or otherwise.

Write for folders illustrating our extensive range of engineering and building know-how.

317 32nd STREET S.W.
GRAND RAPIDS 8, MICHIGAN

For more data circle 347 on Postpaid Card

Now you can use NIALK® TRICHLOR for both flushing and vapor degreasing

Use just one grade of trichlor to flush missile and rocket parts and for vapor degreasing

The *metal degreasing grade* of Nialk trichlorethylene meets government and industry specifications for flushing missile and rocket components.

Its residue is a low 0.0005%. It also meets standard impact sensitivity requirements.

Cut your inventory The time and money savings of this new development are obvious. In just one area—your inventory—you can make substantial savings.

Eliminate mistakes There's no chance of picking the wrong drum now that you need only one grade of trichlor for both flushing and vapor degreasing.

No disposal problems Take the Nialk trichlor you use for flushing and you can use it in your vapor degreasing operation without distilling.

Send for bulletin For more information on this standard grade of Nialk trichlor, write for data sheet No. 814.

Remember—*only Nialk trichlor has* **psp.**

HOOKER CHEMICAL CORPORATION
1401 UNION STREET, NIAGARA FALLS, N. Y.

Sales Offices: Chicago Detroit Los Angeles New York
Niagara Falls Philadelphia Tacoma Worcester, Mass.
In Canada: Hooker Chemicals Limited, North Vancouver, B.C.

HOOKER CHEMICALS PLASTICS

For more data circle 348 on Postpaid Card

carbide; and Type C, silicon carbide. Each of these is also available in various grain sizes.

Manufacturer: BMT Manufacturing Corp., 110 E. 9th St., Elmira Heights, N. Y.

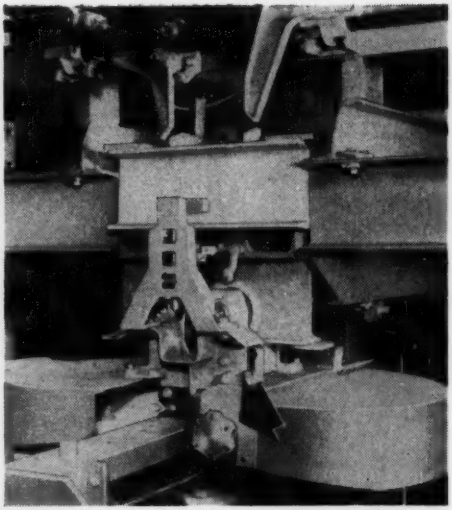
For more data circle 4 on Reader Service Card

★ ★ ★

Automatic Plating Conveyor

A system of conveying carriers from tank to tank manufactured by Abbey Process Automation, Inc., makes it possible for each carrier to go through any one of many different processing cycles independently of other carriers.

Every carrier has a dial. The operator sets this dial to the position that corresponds to the cycle required. The carrier then moves through this cycle automatically, skipping certain tanks, dropping down into others.



Abbey-Matic Carrier with Dial-A-Cycle Selector (arrow): 15 different cycles for each carrier

Carriers in the system operate entirely independently of each other. If one of the carriers is in a tank that

Collect Dirt-Don't Spread It Around

The Dust-All TACK RAG collects dust, dirt and lint from surfaces before painting and fine finishing. Stays soft and tacky indefinitely. Leaves no surface film or residue. Non-combustible.

Made in 18"x36" size folded to 4½"x6", bulk packed or in individual glassine bags, also available in rolls to your specified yardage. Your selection of various weaves of cloth and amount of tack from very light to extra heavy.

MARD PRODUCTS, INC.

1020 E. TEN MILE ROAD • HAZEL PARK, MICHIGAN

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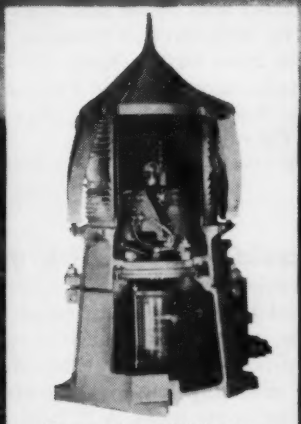
ANOTHER PLATING PROBLEM SOLVED BY SEL-REX!



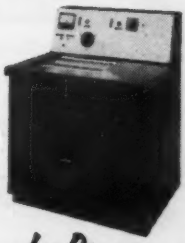
Cutaway view of W&T lantern showing automatic lampchanger and flasher mechanism.

WALLACE & TIERNAN SAVES 932 HOURS ON FIRST TWO JOBS WITH JET PLATER

Always alert to modern production methods, Wallace & Tiernan, Inc., Belleville, New Jersey, have realized almost incredible savings in production-time with their **SEL-REX JET PLATER**—the complete plating "plant" in a single compact package.

"Electroplating of flasher and lampchanger components used in Wallace & Tiernan's Aids To Navigation has always been an important part of our production," says Mr. C. W. Davis, Manager, Mechanical Manufacturing. "That's why we're so pleased with the substantial savings in production-time since we installed our **JET PLATER**. In addition, together with the Sel-Rex Bright Gold Process, we are now getting a Gold Plate superior to any we had ever produced before."

Whatever your plating problem — precious metals, power, equipment or procedures — Sel-Rex Representatives are trained to "Custom-Engineer" solutions to our mutual profit. Send for **FREE** technical data and other case histories, and see for yourself... we may have solved *your* problem last month.



Jet Plater

Complete electroplating "plant" in 34" x 28" x 33" cabinet.

SEL-REX CORPORATION

NUTLEY 10, NEW JERSEY

Manufacturers of Exclusive Precious Metals Processes, Metallic Power Rectifiers, Airborne Power Equipment, Liquid Clarification Filters, Metal Finishing Equipment and Supplies

For more data circle 350 on Postpaid Card

the next carrier must bypass, the second carrier will move past this station while the first carrier remains to complete its time in the tank.

Manufacturer: Abbey Process Automation, Inc., 37-01 48th Ave., Long Island City 1, N. Y.

For more data circle **5** on Reader Service Card

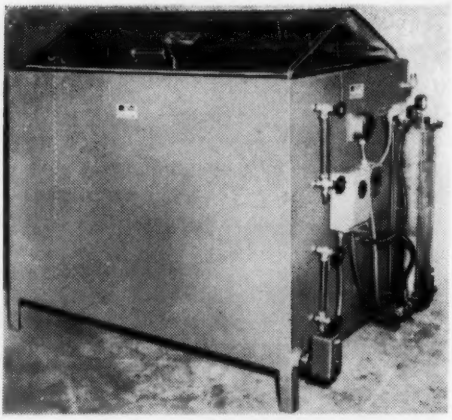
★ ★ ★

Corrosion-Test Cabinets

Corrosion-test cabinets recently introduced by G. S. Equipment Co. are said to produce humidity and salt spray conditions that can be controlled closely and duplicated accurately.

The cabinets meet A.S.T.M. and U. S. Government specifications for such equipment, are useful in salt spray, Corrodkote and humidity testing.

The cabinets are either stainless steel or mild steel epoxy lined, and

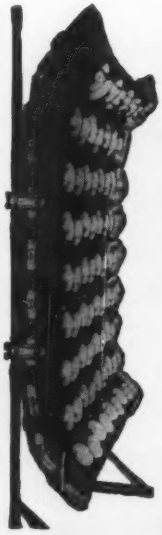


G-S Equipment's Corrosion Test Cabinet: for salt, Corrodkote and humidity testing

are uniformly heated by full-length water jackets on all sides and bottom. Will produce temperatures up to 150 deg. F., and all temperatures can be controlled within plus or minus ½

"Patent-Flex" Infra-Red Ovens

AT WHOLESALER PRICING



The Finest in Quality and Efficiency BUT—NOT THE HIGHEST PRICE

Patent-Flex is Quantity Produced for Lowest Manufacturing Costs

Your Regular Electrical Wholesaler can sell you a Patent-Flex Oven.

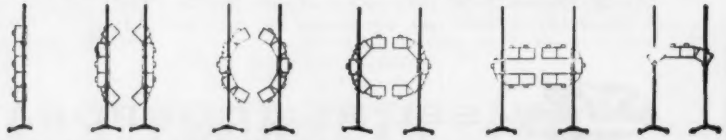
Patent-Flex never becomes obsolete because you can quickly change its shape.

New *"Dual Channel"* Stand Construction for Maximum Rigidity • With Lock-Clamp Slide Adjustment. • New *Snap-On Cover Raceways* pre-wired ready for 115 or 230 V. direct connection and series connection up to 600 V. power supply • New *Bushed Wiring Box Mounting Plate* for simplest possible power connection.

DISTRIBUTED NATIONALLY BY:

General Electric Supply Co. • Westinghouse Electric Supply Co.

Patent-Flex for Exact Requirements • Quickly Changed Shapes



Wil-Son Manufacturing Company Patent-Flex Oven Divn. CLOVERPORT, KY.

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PRODUCT PROTECTION BY THE GALLON

WITH AMCHEM GRANODINE!

One of the most widely used metal finishing chemicals, Amchem Granodine is the most effective pre-paint treatment yet developed for the protection of fabricated steel products.

The non-metallic phosphate coating produced by Amchem Granodine provides an effective base for durable paint finishing and greatly improves the corrosion resistance of the finished product. A variety of Granodizing processes are available for a wide range of finishing operations . . . to assure your products of greater usability through lasting protection.

It may be well worth your while to investigate cost saving, efficient Amchem Granodine—today's most modern metal finishing chemical for steel. Check Amchem where service goes beyond the product with a complete program of technical and engineering assistance!

Write for Bulletin 1380 with Selection Chart to help you choose the Granodine type for your specific needs—and bulletins featuring other Amchem chemicals of vital interest to the fabricator of steel products.

AMCHEM GRANODINE

Amchem Granodine is another chemical development of **Amchem Products, Inc.**, Ambler, Pa. Formerly American Chemical Paint Company. Detroit, Mich. • St. Joseph, Mo. • Niles, Calif. • Windsor, Ont./Amchem and Granodine are registered trademarks of Amchem Products, Inc.

For more data circle 352 on Postpaid Card

deg. F. Test results can be duplicated within 10 per cent, the manufacturer states.

Cabinets have clear plastic inspection panels which the user can look through to watch progress of the test, so as to avoid opening the door and disturbing test conditions.

Units have removable salt reservoir and cover. Optionals include automatic bubble-tower liquid-level control with strainer, air-compressor equipment, exhaust accessories.

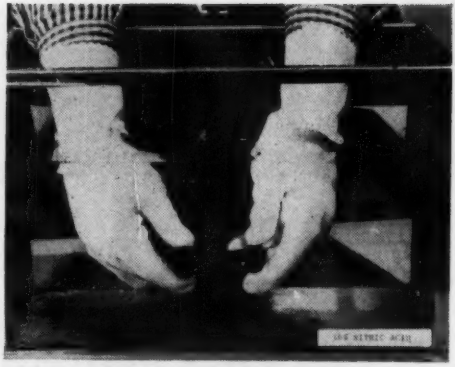
Manufacturer: G. S. Equipment Co., 15583 Brookpark Rd., Cleveland, Ohio.

For more data circle **6** on Reader Service Card

★ ★ ★

Chemical-Resistant Glove

The Stanflex V-20 glove is made of Pylox, a material that provides good resistance to many corrosive chemicals, without requiring excessive thickness. Thus these gloves retain finger sensitivity.



Pylox Gloves resist nitric and chromic acids, have good finger-sensitivity properties

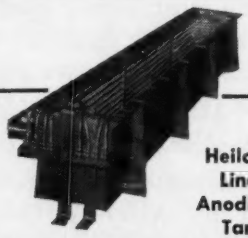
Pioneer says the gloves will withstand immersion in nitric and chromic acids, hydrogen peroxide, oils, greases and some solvents. Non allergenic,

Let

HEIL of Cleveland

Build Your

ANODIZING EQUIPMENT



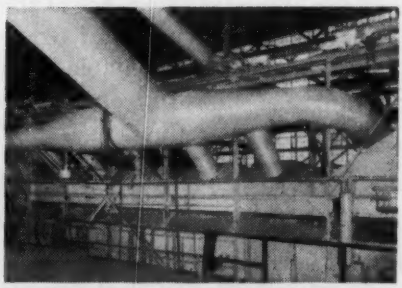
Heilastic Lined Anodizing Tank

Complete facilities including TANKS, protected with our proven Heilastic linings: COOLING COILS; and entire VENTILATING SYSTEMS;—built of our Rigivin (rigid vinyl) or Rigidon (reinforced plastic) that withstand corrosion and give you longer service life.

Let the Heil Corrosion Engineers analyze your needs—and recommend the equipment for a complete system that will exactly meet your requirements.

One source, one responsibility for delivery, service, quality and satisfaction.

Write for Fully Descriptive Bulletins.



Solid Plastic Ventilation System for Handling Acid Fumes

HEIL PROCESS EQUIPMENT CORPORATION

12901 Elmwood Ave. • Cleveland 11, Ohio

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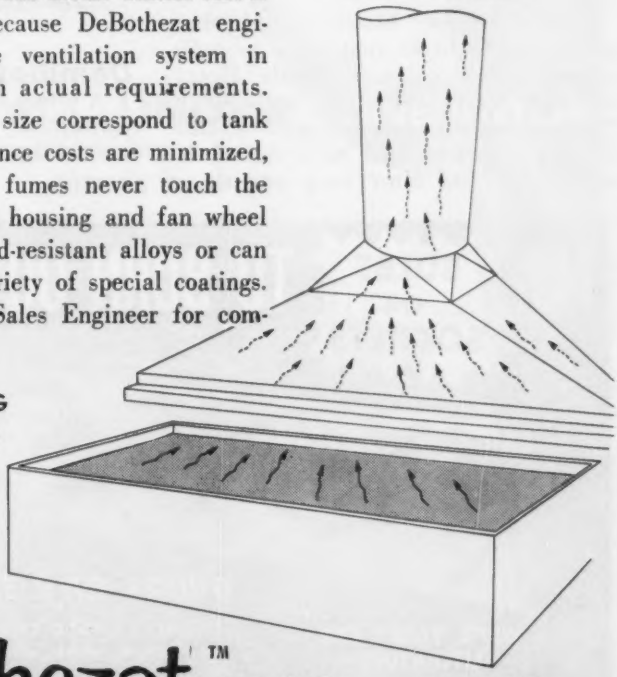
Pulling Power

EXACTLY EQUAL TO THE FUME REMOVAL JOB

DeBothezat Bifurcator fans draw an even exhaust flow over the entire fuming tank surface, leaving no dangerously free areas. Initial cost is the lowest possible, because DeBothezat engineers plan your fume ventilation system in exact accordance with actual requirements. Motor power and slot size correspond to tank surface area. Maintenance costs are minimized, too, because corrosive fumes never touch the bifurcator motor. Both housing and fan wheel can be supplied in acid-resistant alloys or can be protected with a variety of special coatings. Ask your DeBothezat Sales Engineer for complete information.

Easily installed as part of duct inside or outside



FOR ELECTROPLATING
ALKALINE CLEANING
ACID PICKLING
HOT RINSING
DIPPING

De Bothezat™ FANS

A DIVISION OF

American Machine and Metals, Inc.

DEPT. PF-159, EAST MOLINE, ILLINOIS

FOR FURTHER INFORMATION
SEE OUR CATALOG IN
SWEET'S
PLANT ENGINEERING FILE
OR WRITE FOR COPY

IN CANADA: Represented by DOUGLAS ENGINEERING CO., Ltd., Toronto • Montreal

For more data circle 354 on Postpaid Card

good flexibility - retention properties.

Manufacturer: Pioneer Rubber Co., 285 Tiffin Rd., Willard, Ohio.

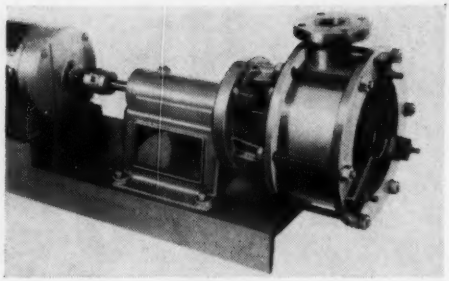
For more data circle **7** on Reader Service Card

★ ★ ★

All-Plastic Centrifugal Pumps

Vanton Pump and Equipment Corp. has introduced a line of centrifugal pumps in which all parts that are exposed to the fluid being pumped are made of unplasticized polyvinyl chloride plastic.

Specifications: Mechanical shaft seals, available in materials to withstand various corrosive fluids. Rotating and stationary rings available in Teflon, carbon, ceramic and stellite. Stationary rings can be reversed for additional use after long periods of service. Casing may be opened to inspect the impeller by removing six bolts. Grease reservoir for bearings.



Plastic Centrifugal Pump: for corrosives

Manufacturer: Vanton Pump and Equipment Corp., Hillside, N. J.

For more data circle **8** on Reader Service Card

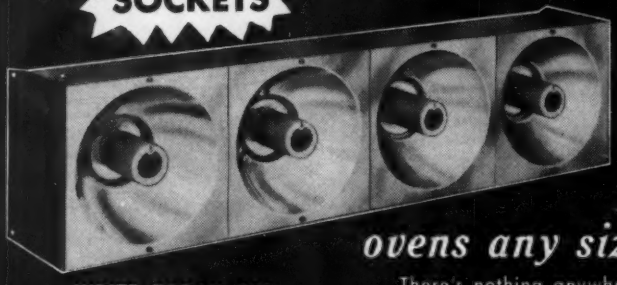
★ ★ ★

Demineralizers

A line of demineralizers recently introduced by Carma Manufacturing Co. is said to be easy to operate and control.

NO BULBS OR SOCKETS TO BURN OUT

NO COLD OR HOT SPOTS with driQuik INFRA-RED INTERLOCKING OVEN SECTIONS



ovens any size or shape

There's nothing anywhere like the driQuik infra-red generators which are lava coated and deliver far more infra-red rays with less power consumption than any other method known. They not only cut down replacement cost; they're immune to shocks, vibration, moisture.

WRITE TODAY FOR LITERATURE showing how you can speed up production and reduce costs by building or having us build driQuik ovens for your needs.

driQuik DIVISION

DRY CLIME LAMP CORP.
GREENSBURG, INDIANA

For more data circle 355 on Postpaid Card

ACETATES
ALCOHOLS
ALIPHATIC HYDROCARBONS
ALKANOLAMINES
AROMATIC SOLVENTS (Petroleum)
CHLORINATED HYDROCARBONS
GLYCOLS and POLYGLYCOLS
GLYCOL ETHER

ALL UNDER ONE ROOF

to give you fast, convenient service

KETONES
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OTHER PRODUCTS: ALKALIES, ANTI-FREEZE, CHLORINATED PARAFFIN, GLYCERINE, OILS and FATTY ACIDS, POLY VINYL ACETATE EMULSION

See, call, or write your local member listed below!

Bulk plants located at Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Detroit, Fort Wayne, Grand Rapids, Houston, Indianapolis, Kansas City, Louisville, Milwaukee, New Orleans, St. Louis, Toledo and Windsor, Ontario, Canada.

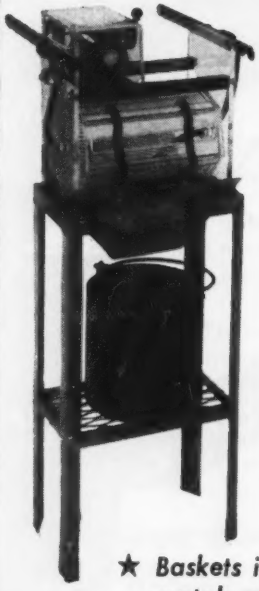
Look for the SC seal in the "Yellow Pages" of your directory under the "Solvents" or "Chemicals" listing. Or write:

SC

THE SOLVENTS AND CHEMICALS GROUP
2540 West Flournoy Street • Chicago 12, Illinois

For more data circle 356 on Postpaid Card

STUTZ



PORTABLE PLATING BARRELS

★ *Baskets in perforated metals or wire mesh.*

★ *Load/Unload Stand for convenient and fast handling of work load.*

The Stutz Portable Barrel is made in 3 standard sizes with cylinders having inside dimensions of 6" x 12", 8" x 18" and 10" x 18" I.D. Smaller upon application. Standard openings are 3/32". Smaller or larger openings can be furnished as required.

Write for Catalog and Prices

We Invite Your Inquiries

THE STUTZ CO.

4410 Carroll Ave., Chicago 24, Ill.

Serving Industry 35 Years

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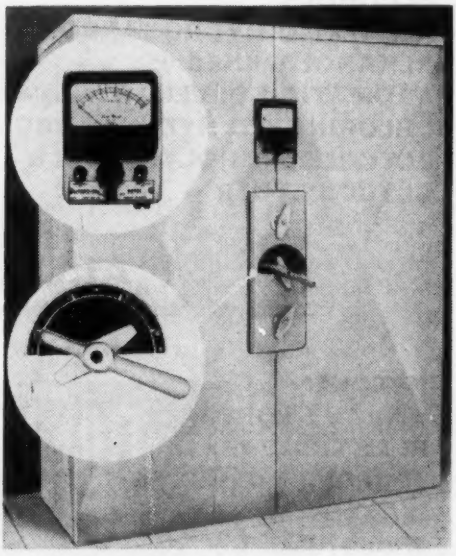
These units will provide water with a purity of less than one-half p.p.m. total dissolved solids.

Specifications: One-handle control valve with four positions is used to direct flow of water (demineralize, back-flush, rinse, regeneration); 18-port rotary valve is leak proof and constructed of materials impervious to chemicals used; direct-reading meter calibrated in p.p.m. and microhms conductance; operates on 105-120 volts, 50/60 cycle; capacity safety factor, 20 per cent or more.



Carma Demineralizer: simplified control

Manufacturer: Carma Manufacturing Co., 1879 Mullin Ave., Torrance, California.

For more data circle 9 on Reader Service Card

★ ★ ★

Immersion Heater

A small immersion heater designated Type LB is designed for heating solutions in laboratory-size tanks used in metal finishing operations such as alkaline cleaning, cyanide plating, rinsing and so on.

These units are sheathed in steel, copper or stainless steel. They mount on the side of the tank, take up little space. 120 or 240 volts, 250 to 1500 watts, 6 to 18 inches long.

Manufacturer: Glo-Quartz Electric Heater Co., Inc., Willoughby, Ohio.

For more data circle 10 on Reader Service Card

★ ★ ★

Conveyorized Loading Platform

A loading platform that is attached to a section of monorail track on a cable conveyor changes elevation to conform to height of the load in a truck or rail car. The moving platform is called "Ride-A-Track"

At its highest elevation, the platform puts the workmen at the proper height to load the cable-link conveyor from a fully loaded truck. As the truck is unloaded, the platform lowers to conform with the truck's load. Moving up and down with the platform, the cable conveyor is always within easy reach of the workmen. The Ride-A-Track platform and conveyor may be used for loading and unloading conveyors used in conjunction with storage racks.

The Ride-A-Track platform is raised and lowered by cables similar to those used on passenger elevators. The conveyor, a Dearborn Cable-Link system, has two flexible monorail sections that permit height adjustment of the monorail track on the Ride-A-Track platform while the conveyor is in operation and loaded.

Manufacturer: Dearborn Fabricating and Engineering Co., 19440 Glendale Ave., Detroit 23, Michigan.

For more data circle 11 on Reader Service Card

TWICE AS FAST!

Cut costs way down with Model 20 New Holland KREIDER Centrifugal DRYER

Does two operations at once . . . Air-dries as it Spin-dries! Double action assures moisture-free surfaces in less time . . . eliminates scoring and marring . . . saves—start to finish!

SPECIFICATIONS:

1-h.p. motor—220, 440, 550 volts—2 or 3 phase. Spins 75-lb. loads at 825 r.p.m.

Quiet V-belt drive. Arc-welded steel plate construction. Weight 490 lbs. Requires minimum floor space.

Meets N.E.C. specs. Auxiliary electric or steam heating units available as optional equipment.

Send for illustrated 4-page folder. Address Dept. PF-0159

NEW HOLLAND MACHINE COMPANY

NEW HOLLAND, PA.

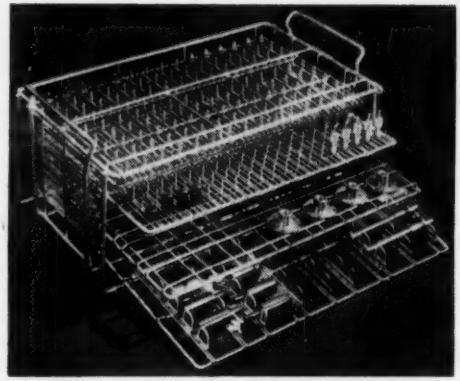
For more data circle 358 on Postpaid Card

Wire Basket

A wire basket for handling precision parts has wire shelves or trays that may be removed from the sides, is named the "Multi-Shelf" Carryer.

The Multi-Shelf Carryer is designed to suspend small precision parts individually so as to protect exposed surfaces during handling, processing, washing, degreasing, and assembly.

Parts are loaded on wire shelves,



Wire Basket: for processing delicate parts

which slide on flat wire shelf supports, and are locked in place by the hinged side. The number of shelves may be varied depending on the size of the parts being handled.

Multi-Shelf Carryers are "positive stacking." They can be moved manually, individually, in stacks, slid on a floor from one station to another, on factory hand trucks, on pallets moved with a fork lift, on roller or monorail conveyors.

Manufacturer: Mid-West Wire Products Co., Inc., 2555 Fenkell Ave., Detroit 38, Mich.

For more data circle 12 on Reader Service Card

★ ★ ★

More Stable Yellow Pigments

Yellow pigments with improved stability in service are said to end the

have your silk screens made by **NAZ-DAR!**

Silk, Nylon or Metal Cloth

- Prompt Delivery anywhere in U. S.
- Absolutely TAUT screens for perfect registry to last impression of run.
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- Prepared by experienced technicians.

PERFECT FOR

TV SETS NAME PLATES TOYS DIALS
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Uniformly high opacity

Write today for screen and ink information, Dept. P-6.

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461 Milwaukee Ave. • Chicago 10, Ill.
inks • varnishes • lacquers • silks
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"PHOSPHOR-BRITE"

Write for details on how you can obtain a test supply sufficient to fill one tank.

The New Univertical Rolled Copper Anode for Acid Baths

Prompt shipment from stock in lengths and shapes to suit your requirements.

Virgin metals used exclusively

UNIVERTICAL
FOUNDRY AND MACHINE COMPANY
14841 Meyers Rd., BRoadway 3-2000, Detroit 27, Mich.

For more data circle 360 on Postpaid Card

wonder about "where the yellow went."

The recently introduced pigments are called Sun Yellows. They retain their color at temperatures above 1,000 deg. F., resist sunlight, alkalies and acids, according to the producer.

The more durable yellow pigments are based on a nickel oxide-titanium dioxide combination. Nickel, which makes up about three per cent of the pigment, helps contribute to pigments' durability and chemical resistance.

The nickel-base pigments are expected to be useful in architectural and industrial finishes.

Manufacturer: Harshaw Chemical Co., 1945 E. 97th St., Cleveland 6, Ohio.

For more data circle **13** on Reader Service Card

★ ★ ★

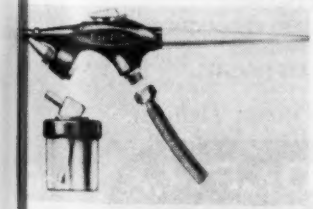
Touch-up Spray Gun

Capable of producing a pencil thin line, a broad shading or a stipple effect, an air brush introduced by the Binks Manfacturing Company is designed for finishing small parts and for touch up.

Called the "Wren," it is expected to prove especially useful to appliance, electronic, toy, novelty, plastic and lamp manufacturers.

The Wren is available in two models. Model A sprays light to medium consistency materials such as dyes and other light fluids. Model B is for use with medium to light-heavy materials such as lacquers, enamels and other paints. Both models are siphon fed.

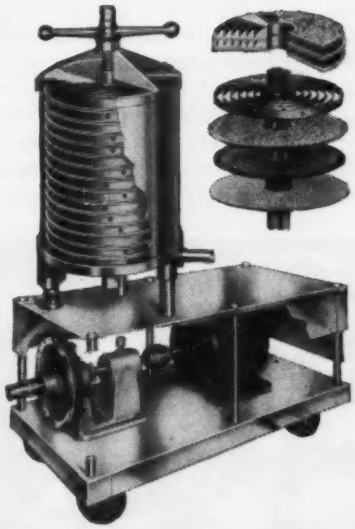
The closed bottle used on the small touch-up gun eliminates the danger



The Wren: for touch up

ELIMINATE COSTLY PLATING REJECTS

due to pitting or rough deposits!



Sectional view of "Sealed-Disc" filter and pump unit. Portable or fixed installations are available in a wide range of capacities.

The Alsop Method of "SUB-MICRON" filtration assures you of totally clean plating solutions at all times with no interruption in your plating cycle! *All* impurities are automatically removed as fast as they are formed or introduced.

ALSOP

FREE! Your guide to better plating. "The Use of Filters in Electroplating" by J. B. Mohler

ENGINEERING CORPORATION
1401 Keen St., Milldale, Connecticut

For more data circle 361 on Postpaid Card

of spillage that might be encountered in using an open color cup.

Manufacturer: Binks Manufacturing Co., 3118-40 Carroll Ave., Chicago 12, Illinois.

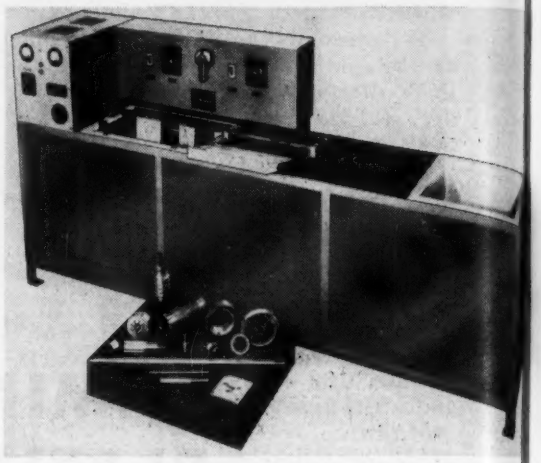
For more data circle 14 on Reader Service Card

★ ★ ★

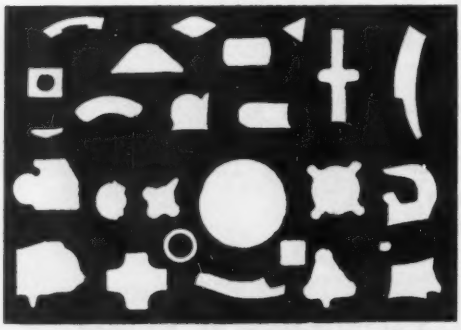
"Packaged" Hard Chrome Plating Unit

Description: A "packaged" hard chromium plating unit produces coatings with thickness controlled within 0.0001 inch, the manufacturer states. By precisely controlling current density, time and solution temperature, the unit makes it possible to hard chromium plate without subsequently machining to correct dimensions.

A completely self-contained unit, the "Nankervis Hard Chromer" comes ready to connect, includes tanks, rectifiers, automatic heating equipment and controls.



Nankervis Hard Chromer: plating to 0.0001 inch means no subsequent machining



Pre-Cut Masks Speed Finishing

Brady Pre-Cut Masks are self-sticking — go on fast and accurately. Protect from finishing to inspection. Hundreds of shapes and sizes in stock, for paint spraying, baking, tumbling, etc. Specials made to order. Fast delivery. Distributors in 150 cities.

Write for free samples and Bulletin 160-C.

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Randolph

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BETTER FINISHES for your products

LACQUERS • ENAMELS
DOPES • THINNERS
CLEAR METAL FINISHES
COLORED LACQUERS
CLEAR S.G. FOR METAL
TEXTURE ENAMELS
SPECIALIZED PRODUCTION FINISHES
AIRCRAFT FINISHES

Depend on us for Prompt Delivery

RANDOLPH PRODUCTS CO.
CARLSTADT, N. J.

For more data circle 363 on Postpaid Card

The unit is said to plate with excellent throwing power, so that grooves, recesses, shoulders and other areas can be plated without difficulty.

Literature on the unit is available from the manufacturer.

Manufacturer: George L. Nankervis Co.,15300 Fullerton Ave., Detroit 27, Michigan.

For more data circle 15 on Reader Service Card

★ ★ ★

Polishing-Buffing Conveyor

Description: An indexing-type continuous - circuit conveyor designed for use with types "L" and "V" polishing and buffing heads is made in sections to facilitate expansion, rearrangements, and shipping.

The complete conveyor consists of loading station, drive section, variable number of polishing stations.

The fixtures that hold parts being buffed are carried around the track by a roller chain. The fixture-spindle assemblies are bolted to this chain. They ride in the track on hardened wear - resistant steel shoes. Tracks are renewable.

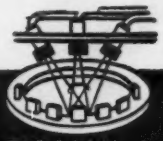
The drive consists of a totally enclosed motor, magnetic clutch and brake mechanism and a gear reduction unit. Brake and clutch are controlled by a pneumatically driven time control that provides the preset dwell periods.

Fixture spindles have integral individually powered motor and gear units. Speed of these units can be controlled by setting a dial on the control panel. Spindle speeds are infinitely adjustable throughout their speed ranges. Fixture spindles are in constant rotation except while at loading stations.

The conveyor runs at maximum speed between work stations to mini-

which of these CLEANING PROBLEMS are yours?

- ☐ Insulating coatings
- ☐ Amorphous metal
- ☐ Discoloration
- ☐ Lacquer
- ☐ Plastic flash
- ☐ Rubber flash
- ☐ Glass flash
- ☐ Enamel flash
- ☐ Imbedded metal
- ☐ Lead deposits
- ☐ Carbon
- ☐ Brazing flux
- ☐ Weld spatter
- ☐ Stains
- ☐ Heat treat-scale
- ☐ Radio-active oxides
- ☐ Dirt
- ☐ Grease
- ☐ Oil
- ☐ Rust
- ☐ Varnish
- ☐ Paint
- ☐ Plate
- ☐ Core sand
- ☐ Silicate coatings
- ☐ Excess solder
- ☐ Ceramic deposits
- ☐ Graphite
- ☐ Slag
- ☑ Polishing compound



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TWO SPEED

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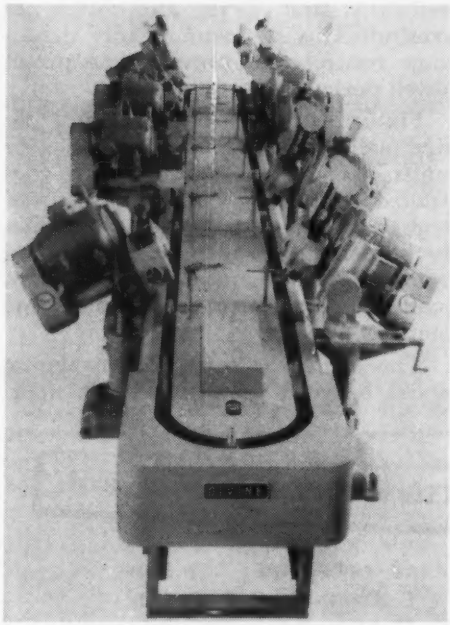

Divine Brothers' Polishing-Buffing Conveyor

mize time consumed in indexing from one station to another. This permits work to dwell for a maximum time at each work station.

Parts can be loaded and unloaded at both ends of the conveyor when running simpler work that requires fewer stations.

Manufacturer: Divine Brothers Co., Seward Ave., Utica, N. Y.

For more data circle **16** on Reader Service Card

★ ★ ★

Copper Anodes

Phosphor-Brite Anode

Rolled round, oval and forged ball copper anodes for acid copper plating recently introduced by Univertical Foundry and Machine Co. are called "Phosphor-Brite."

Advantages of these copper anodes include reduction of sludge and copper buildup, smoother and denser deposits, minimum treeing, and no necessity for bagging or diaphragms, the manufacturer reports. Anode corrosion is good, deposition is rapid, and less acid replace-

WOOD TANKS
FOR PLATING AND PICKLING

• Give us your requirements . . . we'll build it from the finest woods, to fit your needs *exactly!*

Send for details.

WOOD TANK DIVISION

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INCREASE PRODUCTION! CUT COSTS!

Your paint is factory fresh ready for use when mixed in a MIRACLE PAINT MIXER

5 GAL. MODEL

¼ Pt. to 55 Gal. Mixers Available

Write to:

MIRACLE PAINT REJUVENATOR CO.

500 NORTH ROBERT STREET, ST. PAUL 1, MINNESOTA

For more data circle 366 on Postpaid Card

ment, additives and carbon treatment are required, it is stated.

Manufacturer: Univertical Foundry and Machine Co., 14841 Meyers Rd., Detroit 27, Mich.

For more data circle **17** on Reader Service Card

★ ★ ★

Vented Immersion Heater

An immersion heater that is vented to prevent explosions caused by gases expanding in the enclosed assembly has been introduced by N. J. Thermex Co., Inc.

This unit is also sealed from liquid to prevent damage caused by accidental total immersion in corrosive chemicals.

Both quartz and steel immersion heaters are available with the recently announced safeguards, which are known as Vapo-Vent and Neo-Tite.

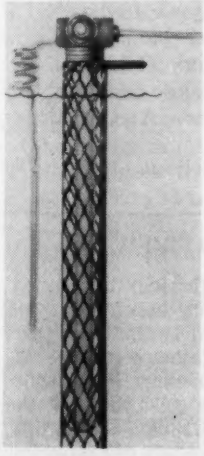
Manufacturer: N. J. Thermex Co., Inc., 537 Bergen St., Harrison, N. J.

For more data circle **18** on Reader Service Card

★ ★ ★

Infrared Ovens

Infrared ovens produced by Wil-Son Manufacturing Co. now feature a wiring system that consists of a roll-formed wiring raceway on each lamp row. It snaps into place and can be re-



Vented Immersion Heater

PAINT STRIPPING CLINIC!

Send Us Your Tough Stripping Problems for Fast Action!

10 YEARS OF BECK PAINT STRIPPING CLINICAL SERVICE Saves Thousands of $$$ for Customers—Who Now Use World-Famous...

EPOXYSTRIP

Better find out for yourself . . . about Epoxystrip, Econostrip and other Beck Paint Remover lines and formulations. Use the BECK CLINIC SERVICE — send us several parts, sections, or test panels (properly tagged) of the work to be stripped.

Write or 'phone giving us essential information—your problem details, requirements, tanks available, hot or cold, etc. This service, and our prompt report, are free, with no obligation.

Beck Strippers outstrip all others — removing organic finishes, epoxies, etc., as easily as baked enamels, lacquers, etc. No stripping scum — clean rinsing!

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3350 WEST 137th STREET — CLEVELAND 11, OHIO

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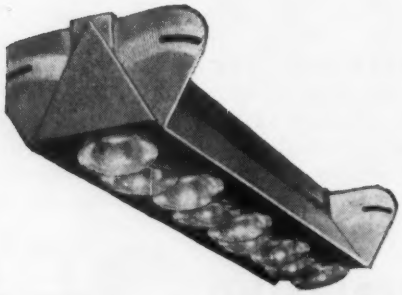


Patent-Flex Infrared Heating Panel: has snap-out wiring raceway on each lamp row

moved by using a screwdriver to snap release it.

The ovens also have an outlet box mounting plate permanently attached to the wiring channel. The outlet box is provided with a bushed hole for bringing the leads to the power supply. This construction is said to permit the simplest possible power connections.

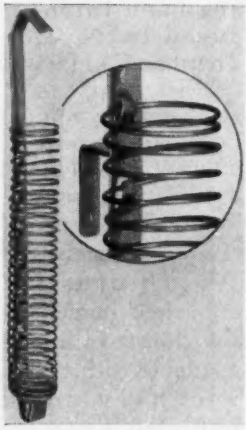
Manufacturer: Wil-Son Manufacturing Co., Dept. PF, Cloverport, Ky.

For more data circle 19 on Reader Service Card

★ ★ ★

Weldless Anode Basket

Description: Resistance to solutions that eat the welds of anode baskets is provided by a weldless anode basket recently introduced by Belke Manufacturing Co.



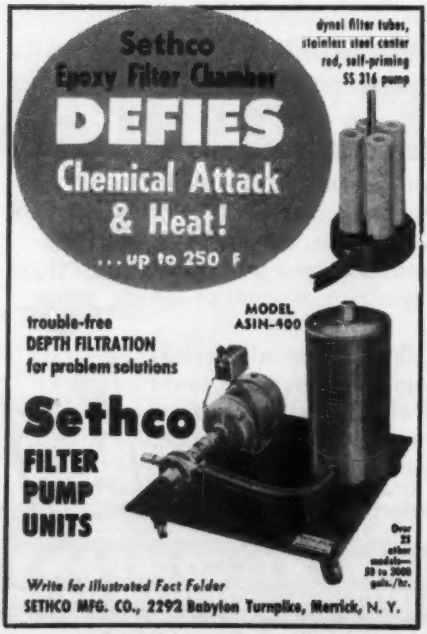
Belke Anode Basket

The cold rolled spine is formed at the bottom to hold the coil spring basket securely without welding. Die-formed tongues from the spine also engage coils of the basket, thereby retaining the basket against the spine without welds.

Standard length, hook to basket, is six inches. Standard basket lengths are 18, 21, 24, 27, and 33 inches.

Manufacturer: Belke Manufacturing Co., 947 N. Cicero Ave., Chicago 51, Illinois.

For more data circle 20 on Reader Service Card



For more data circle 368 on Postpaid Card

"IMPERATIVE"

"My foreman, Glenn Holland, has gotten such a good electroplating background from your course that I feel it imperative to take the course myself. Please enroll me at once," writes job shop owner H. Hammer of N.Y.C. If you want a good plating background in a hurry, ELECTROPLATING KNOW HOW, the unique home study course, is the easiest way to get it! Write Dr. Joseph B. Kushner, Box 2066, Evansville 14, Ind.

For more data circle 369 on Postpaid Card

Expanded Titanium Sheet

Mallory-Sharon Metals Corporation has developed an expanded titanium sheet that the company expects to be useful in plating and acid-dipping applications.

Chief advantages of the material are its excellent resistance to corrosion and the fact that in plating operations the titanium itself draws no current, says Mallory-Sharon.

Typical uses for the expanded metal include manufacture of acid-dipping baskets and protection shields for such products as immersion - heating electrodes.

The expanded sheet will be available in flattened or unflattened mesh, gauges from 0.050 to 0.125 inch, and in ½ to 1½-inch diamonds, the manufacturer reports.

Tests indicate that the material can be bent over a radius as small as four times the metal thickness in either the longitudinal or transverse direction, after sandblasting and pickling, says Mallory-Sharon.

Manufacturer: The Mallory-Sharon Metals Corporation, Niles, Ohio.

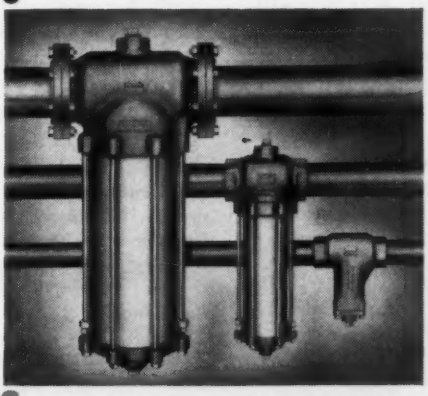
For more data circle 21 on Reader Service Card

Coated Abrasive Paper

Armour No-Load coated abrasive paper incorporates a special coating that prevents loading or clogging the abrasive grain. Residue that collects on the paper may be removed by gently slapping the paper with the hand.

The Armour sandpaper can be used for all types of dry sanding applica-

LINE STRAINERS



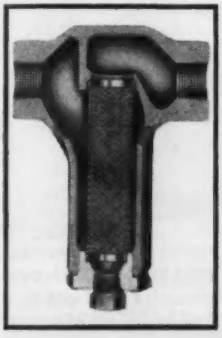
for **SPRAY NOZZLE** SYSTEMS and RELATED APPLICATIONS

in stainless steel, cast iron and brass

A complete range of capacities in ¼" to 4" female pipe connection sizes . . . and in 3" to 6" flange connection sizes. Keeps lines clear for efficient operation. Easily flushed.

TOP PERFORMANCE DESIGN

Screen area so large that strainers will take 75% blocking with less than ½ lb. pressure drop under normal flow conditions. Top and bottom flange collars on screen give seal fit and rigidity.



SPRAYING SYSTEMS CO.
3229 Randolph Street
Bellwood, Illinois

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For more data circle 370 on Postpaid Card

tions, is especially recommended for sanding undercoats, primers and surfacers.

The coated abrasive paper is available in several new grits and grades. New grits and forms include silicon carbide "A" weight paper, grits 500 through 80; heat-treated garnet "A" weight paper, grits 280 through 180; silicon carbide "C" weight paper, grits 180, 150, 120 and 100; aluminum oxide "D" weight paper, grits 80 and 60.

Manufacturer: Armour Coated Abrasives Div., Armour & Co., Alliance, Ohio.

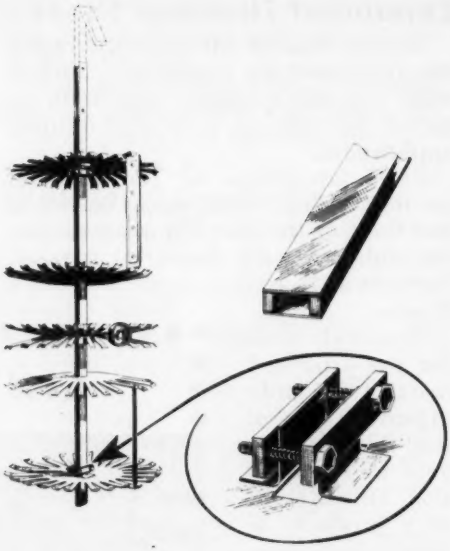
For more data circle **22** on Reader Service Card

★ ★ ★

Anodizing Rack

A versatile anodizing rack made by Service Screw Products Company is constructed to be useful in processing parts of almost any shape. Made of titanium, the rack requires no coating, and since titanium is not anodized during the process, no stripping is necessary. When model changeover time comes and new parts with different dimensions must be processed, the rack is easily modified.

The rack consists of a spine with



Titanium Anodizing Rack (left) adjusts to accommodate wide variety of sizes and shapes. Clamp used to hold work holder on the spine is shown at lower right of photo. Enlarged section of the spine is at upper right.

For Platers, Silversmiths, Jewelry Mfgrs., Makers of Watches, Clocks and Electronics and other metal finishers.
Supplied in straight or crimped brass, steel, nickel silver or stainless steel wire in sizes .0025 to .006 and in bristle, fibre or Nylon. Special sizes and shapes to order.
Write (Dep't. P) on your letterhead for catalog and price list.

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20800 CENTER RIDGE RD., CLEVELAND 16, OHIO

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disc-shaped workholders (see cut) that can be moved up and down the spine by loosening and tightening clamps. Workholders can be adjusted up or down in increments from 0.001 inch to 32 inches.

Manufacturer: Service Screw Products Co., 133A N. Green St., Chicago 7, Illinois.

For more data circle **23** on Reader Service Card

★ ★ ★

Compact Barrel Finishing Setup

Description: A compact installation for high-production barrel finishing includes a jib boom that makes it possible for one operator to handle as many as eighteen barrels. The centrally located jib boom provides rapid handling of individual barrels between the mechanized units and unloading equipment.

On the "Stubby" models, used to conserve wall space, two sets of rollers rotate the barrels, operate at different speeds, and make possible simultaneous deburring and burnishing operations. Barrels may be added to or taken from either the "Stubby" or the "Long Tom" without disturbing the time cycle of other barrels on the same unit.

High-Production Barrel Finishing System

Bond® TACK CLOTH for a SPECK-FREE FINISH EVERY TIME!

SAVE TIME AND WORK WITH BOND TACK CLOTHS — NOW AVAILABLE IN HANDY ROLLS OR CUT BULK—WHITE OR GOLD —IN FOUR DIFFERENT TYPES OF CLOTH

Get your Tack Cloth packed just the way it's easiest for you to use . . . either in 150 yard rolls of 36" wide cloth or in handy cartons . . . 100 or more Tack Cloths to the carton.

No matter which way you buy it, you can be sure that every square inch will stay SOFT and TACKY until the very last bit is used up! The Cut Bulk size is 18" x 36" . . . folded to 4½" x 18" or 9" x 18" for ease of handling. ALL BOND TACK CLOTH is Spontaneous Combustion Proof, Lint-Free, and Wax-Free. Gives a sparkling speck-free Finish every time. Clean and Sanitary. No waste. Choice of Standard, Extra Tacky or Less Tacky.

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Cut off any size piece to use as needed.

TRY THEM AND COMPARE RESULTS.
Samples Gladly Sent Upon Request.

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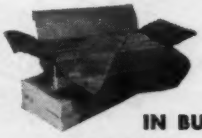
"The Tacky Wiper Specialist"



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A WARRANTY OF SATISFACTION IN EVERY CARTON.

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At the end of any run the media is automatically screened and separated according to size for return to the media storage rack. Work pieces can be placed in the hot-sawdust drying barrel in preparation for inspection and shipment.

Located within the same work area are racks for eight to 12 extra barrels, 15 media-storage pans and 12-50-pound drums of assorted compounds.

Manufacturer: Speed-D-Burr Corp., 3613 San Fernando Rd., Glendale 4, California.

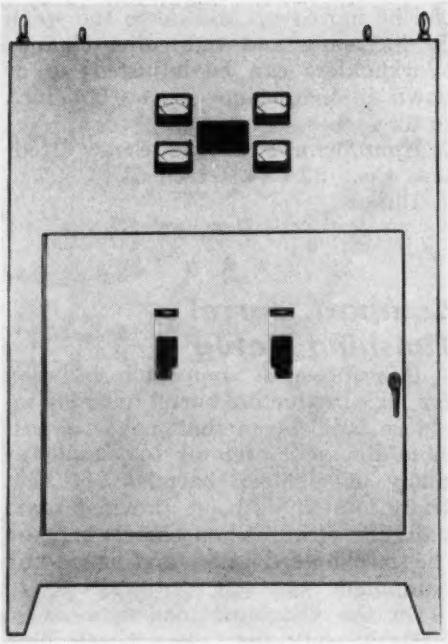
For more data circle **24** on Reader Service Card

★ ★ ★

Silicon Rectifiers

Syntron Company has added silicon rectifiers to its line of d.c. power units.

The recently introduced units have a 92 to 97.5 per cent power factor, 10 per cent voltage regulation from no load to full load, four per cent ripple in direct current and high overload capacity.



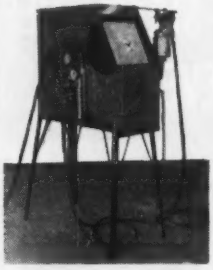
Syntron Silicon Rectifier: 6 to 48 volts

Low-voltage units are available with capacities of 1,000 to 10,000 amperes and 6, 9, 12, 18, 24 and 48 volts d.c.

Manufacturer: Syntron Company, 452 Lexington Ave., Homer City, Pa.

For more data circle **25** on Reader Service Card

NOW . . . . *A Complete Paint Shop in ONE PACKAGE*



The #RH 2010 Machine has a 6-position mask holder, removable paint filter and six extra fiber filter pads, mask washer with built-in agitator. Complete with spray gun and air regulator and 20' of air hose. We make any type masking or automatic painting equipment.

DUMATIC DEVICES INC. *for Production Finishing*

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McKeon Bldg., 621 W. Pittsburgh St., Greensburg, Pa.

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Colored Chromates

A powdered chromate called Duracoat D-Y, recently introduced by Heatbath Corp., is dissolved in water and a small amount of nitric acid to make up a solution that produces a clear blue bright chromate film on zinc surfaces. This film can be dyed to produce various colors, using dyes available from Heatbath.

Manufacturer: Heatbath Corporation, Springfield 1, Mass.

For more data circle **26** on Reader Service Card

★ ★ ★

Portable Paint Heater

A portable paint heater called the 300 B2 can be carried by the operator (see cut). It is especially suitable for maintenance and construction painting and any work that requires portability.

This lighter-weight model combines

Spee-Flo's Portable Paint-Heating Unit

you can tell

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IN STOCK—tremendous selection of colors including popular metallic pastels, statuary and antique shades.

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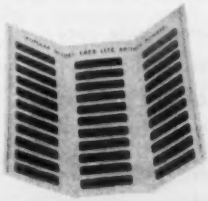

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a high-wattage heating unit with a plastic-insulated case. It is comfortable for the painter because no heat is felt. Capacity: 10 g.p.h.

The explosion-proof heater contains no moving parts. It can be installed in any conventional painting system. Cleanout is accomplished by solvent flush of the paint lines.

Manufacturer: Spee-Flo Company, 6614 Harrisburg Blvd., Houston, Tex.
For more data circle **27** on Reader Service Card

★ ★ ★

Olive Drab Cadmium Coating

Description: An olive drab coating (Kenvert No. 11-PC) for cadmium comes in powder form, is shipped in a non-returnable package.

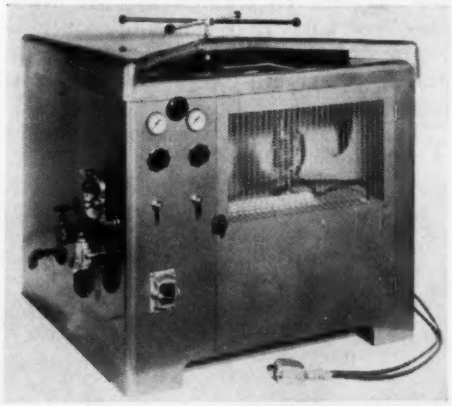
Properties: Powder when mixed with nitric acid forms a hard, olive drab deposit on cadmium plated parts. Protects parts from corrosion, meets requirements of Spec. QQ-P-416, Type 2. May be dyed black or other colors for identification purposes. Bath is stable, does not oxidize or deteriorate when not in use. Finish is good base for paint.

Manufacturer: Conversion Chemical Corp., Rockville, Conn.
For more data circle **28** on Reader Service Card

★ ★ ★

Spray Decorating-Mask-Washing Machine

A machine which combines automatic spray-decorating equipment with



Spray Decorator and Mask Washer: automatic

automatic mask-washing facilities has been announced by Conforming Matrix Corporation.

TRUE BRITE BRASS SOLUTION

A foolproof solution which has been in use for over 6 years in light and heavy production.

- Ready To Use—Just Add Water
- No Variance in Color
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FINISHING OVENS

THE LANLY CO.
2800 EUCLID AVE. • CLEVELAND 15, O.
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For more data circle 378 on Postpaid Card

The machine is expected to be useful for spray finishing operations that employ masks with fine detail, or for use where a heavy material is used for decorating and only a few shots can be obtained on a mask before washing becomes necessary.

Continuous production is possible, with clean masks available as frequently as required.

When the mask being used needs washing, the operator indexes a rotary plate to which four masks are attached. The soiled mask is automatically cammed into the washer. A second mask moves from the first to a second washing station. A third mask passes from the second station to a blowoff, which removes pockets of solvent. A fourth mask emerges from the drying station and goes into position for continued spraying.

The clean, dry mask is ready for use in less than a second. The operator need not handle the masks.

Any of the three basic gun movements—straight line (reciprocator), spinning (whirling guns for circular work), and oscillating (multiple-pass), can be installed quickly.

The unit consumes little solvent, it is stated, since efficient baffling and control of air currents within the machine prevent fumes from escaping.

The machine will paint areas up to 6″ by 6″ square or 6″ in diameter.

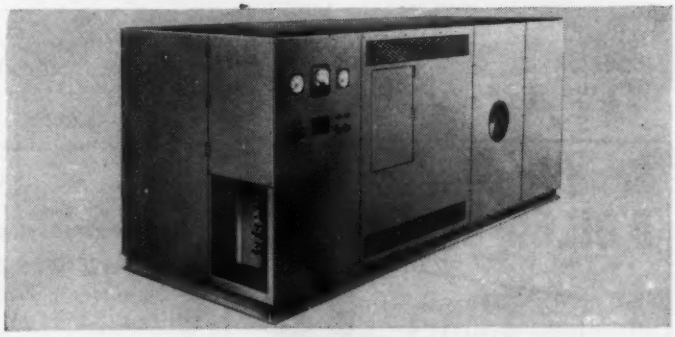
Manufacturer: Conforming Matrix Corporation, 356 Toledo Factories Building, Toledo 2, Ohio.

For more data circle **29** on Reader Service Card

SYNTRON

SELENIUM and SILICON

POWER UNITS



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SYNTRON Selenium or Silicon Rectifier Power Units are engineered to give maximum service with a minimum of cost. The high efficiency, excellent power factor, rugged construction, proven dependability, simplicity of installation and low maintenance make SYNTRON Selenium or Silicon Rectifier Units the most outstanding power conversion unit in their field.

SYNTRON Selenium or Silicon Rectifier Power Units can provide efficient, economical dependable d-c power supplies for your operation.

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452 Lexington Avenue Homer City, Penna.

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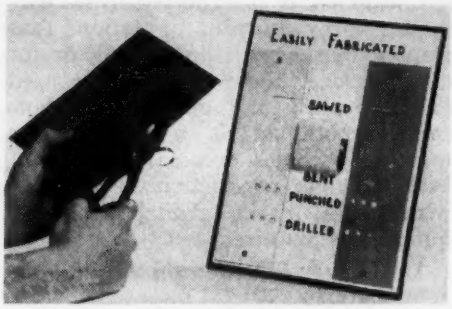
Porcelain Enamel for Aluminum

Description: A porcelain enamel for aluminum carrying the "3M" brand name is completely lead free. The recently introduced enamel is said to provide better adhesion and improved color reproducibility characteristics.

Characteristics: Good coverage qualities, abrasion resistance, resistance to chemicals. Thinner coatings are said to be made possible by the enamel's greater opacity and lower tendency to dissolve pigments and opacifiers. Good weathering resistance. Aluminum coated with this frit can be drilled, punched, cut or sheared with little or no chipping of the enamel, the manufacturer states.

Ordinary spray equipment and furnaces are required for application of the lead-free enamel. Firing temperatures range from 950 deg. F. to 1000 deg. F.



Aluminum coated with lead-free porcelain enamel can be sheared, sawed, bent, punched and drilled without flaking

Applications: Architectural panels, cooking ware, signs, boats, awnings, outdoor furniture, other products.

Manufacturer: American Lava Corporation, subsidiary of Minnesota Mining & Mfg. Co., Chattanooga 5, Tennessee.

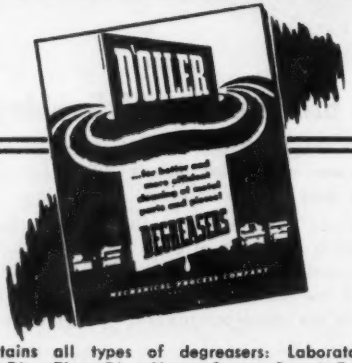
For more data circle 30 on Reader Service Card

★ ★ ★

Pre-Finished Brass-Plated Steel

American Nickeloid Co. has introduced premium-grade brass-plated steel in 24-inch widths and standard-grade brass plated steel in 32-inch widths. Both grades carry heavier brass plates than previously available.

Send for this folder on
D'OILER DEGREASERS



Contains all types of degreasers: Laboratory, Two-Dip, Three-Dip, Vapor Spray, Barrel Type, Automatic, Semi-Automatic, Driers, Stills and Specials.
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. . . Excellent resistance to Salt Spray, Gasoline, and Solvents . . .

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The brass finish is protected with a clear baked organic finish that gives excellent protection and in no way limits the fabricating properties of the metal.

The product can be formed easily into many shapes, using standard production methods. Some typical uses include lamp shades, displays, trays, curtain rods (excellent for roll forming), wall clocks, hardware.

Nickeloid brass steel is available in bright and satin finishes and unpolished, with a heavy pure brass surface to allow for polishing after fabrication.

Manufacturer: American Nickeloid Company, Peru, Illinois.

For more data circle 31 on Reader Service Card

★ ★ ★

Photo Resist Stripper

Most photo resist materials used in printed circuit manufacturing may be removed by a 30-second dip in Resistrip, a product recently introduced by Sel-Rex Corporation.

The cold stripping solution is said to provide two advantages. (1) Fast stripping. (2) Its use results in clean surfaces, ready for subsequent plating or dip-soldering operations.

The formulation contains an ingredient that aids in detection of any traces of photo resist not removed by the initial 30-second dip. Remaining resist shows up as a brownish film. This "self-indicating" feature is said

The radial segment construction of the Zip-Tip Buff permits it to perform equally well on flat or contoured surfaces. The cross-cutting movement of the spoke-shaped segments prevent work streaking while it breaks up straight-line patterns on the surface.

- Zip-Tips are available in a wide variety of all cloth constructions —also combinations of cloth and sisal.
- Zip-Tips are made of heavy-duty, bias-cut materials mounted on ventilated steel centers.
- Zip-Tips are extra thick and provide wider buff faces with greater compound retention capacity.
- Zip-Tips are perfectly balanced —require no raking.

Write for Descriptive Literature

FORMAX MFG. CORP.
DETROIT 7, MICHIGAN
"THE FOUR McALEERS"

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to facilitate gaging of immersion time required to remove photo resist of different types and varying thicknesses.

According to the manufacturer, the stripper is non-combustible and long-lived. An "emulsifying blanket" which retards evaporation reportedly makes the material economical to use.

A technical bulletin describing Resistrip is available on request.

Manufacturer: Sel-Rex Corporation, Nutley, N. J.

For more data circle **32** on Reader Service Card

★ ★ ★

Additive for Copper and Bronze Plating Baths

Description: An additive called Neochel, formulated for cyanide copper and bronze plating baths, is said to give excellent results when used as a replacement for Rochelle salt and other additives.

Properties: Baths containing Neochel are said to have improved cathode efficiency and thus plate faster; anode efficiency is improved, even at high current densities, it is stated; the additive contains chelating agents, which form complexes with contaminants such as chromium and thereby promote better deposits; Neochel will also cut cyanide decomposition rates and retard carbonate buildup, the manufacturer states.

Complete technical information on this product is given in Bulletin 158, available from the manufacturer.

Manufacturer: Metal & Thermit Corp., Rahway, N. J.

For more data circle **33** on Reader Service Card

★ ★ ★

Oven Heater

An indirect firing system recently introduced by R. C. Mahon Co. is expected to be useful in heating paint-baking ovens.

The recently introduced system incorporates "unique manifolding" and a method of handling large volumes of recirculated air.

Mahon plans to incorporate the system in two sizes of heaters, which can be either gas or oil-fired. The larger unit will measure only 7 by 2 by 7 feet, and like the smaller one,

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1025 Broad St. Newark 2, New Jersey
Hammond Solvents Recovery Service
241 Brunswick Rd. Hammond, Ind.

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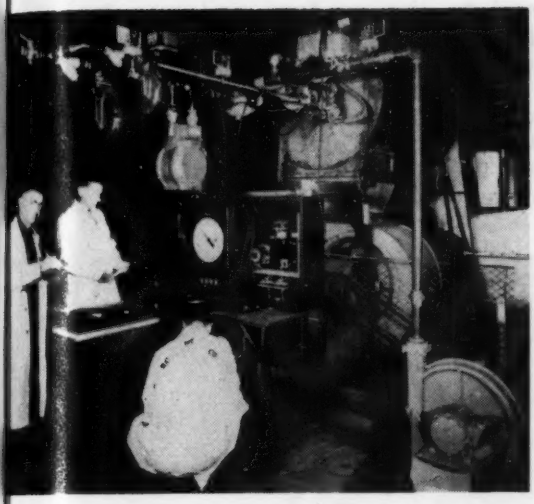

Mahon engineers test drum-type indirect-fired heater being developed for paint baking ovens and other applications where products of combustion are undesirable. Unit provides up to 500,000 Btu. per hour, handles large volumes of recirculated air, burns gas or oil.

will require no brickwork in its installation. The latter also will be produced for use in groups, where necessary.

Manufacturer: R. C. Mahon Co., Detroit 20, Mich.

For more data circle **34** on Reader Service Card

★ ★ ★

Spray Gun for Viscous Materials

The Eclipse Guk-Rod automatically sprays heavy viscous materials such as sound deadener, underbody coating, asphaltums, fibrated materials and adhesives.

The air-operated gun will withstand fluid pressures well over 500 p.s.i.

Features: Hardened moving parts such as fluid tip and plunger; special-design carbide nozzle insert; fluid passages with large openings; fluid hose connection has ¾-inch inside diameter; moving parts self-aligning;

Another **fine** product made **finer** . . .

with the PARAMOUNT "Finishing Touch"

"We require that the finish on both our stainless steel and chromium plated valve plungers be held within 7 to 12 microns," says C. B. Hunt & Son, Inc., manufacturers of precision pneumatic and hydraulic pressure valves. "Finish is a vital factor as it affects the seal of the valve. Our experience has proved that Paramount Felt Wheels are best for this buffing operation. We use an extra soft wheel with a white chrome buffing composition to give a fine polish without destroying close tolerances."

Precision finishes with Paramount Felt Wheels save time and money for hundreds of manufacturers, as they will for you. Contact your jobber today.

Paramount

Felt Wheels, Bobs, Sheet Felt

Bacon Felt Co. 447 West Water St., Taunton, Mass.

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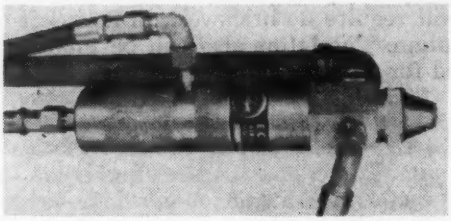

Eclipse Guk Rod: for spraying viscous fluids

special V-ring packing; air seal is protected by an extra wiping seal.

Manufacturer: Eclipse Air Brush Co., 390 Park Ave., Newark, N. J.

For more data circle **35** on Reader Service Card

★ ★ ★

Chemical Resistant Flooring

Description: A thermosetting material called Penntrowel recently introduced by Pennsalt Chemicals Corp. is said to give excellent protection to floors, piers and walls exposed to corrosive chemicals.

The catalytically cured coating is mixed just prior to application, troweled on, hardens overnight into a coating that is said to be as tough as concrete, yet has good resistance to acids,

Penntrowel has butter-like consistency, trowels on easily to form chemical resistant coating on new or old concrete surfaces.

alkalies and solvents, temperatures up to 230 deg. F. One type of this material, designated Penntrowel Carbon, will resist hydrofluoric acid and other fluorides. The product is applied in thicknesses ranging from 1/16 to 3/16

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CINCINNATI 2, OHIO

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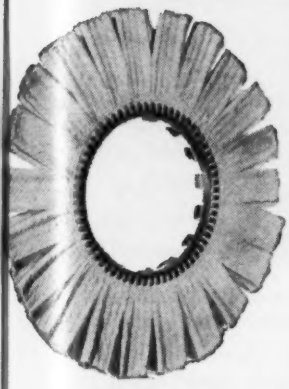
inch, depending upon severity of service.

Manufacturer: Pennsalt Chemicals Corp., 3 Penn Center, Philadelphia 2, Pennsylvania.

For more data circle **36** on Reader Service Card

★ ★ ★

Abrasive-Treated Buff



Abrasive-Treated Buff

Description: A process for treating buffs recently developed by the American Buff Co. is said to improve buffs in several ways.

Known as the Abrasive Treatment, this method of impregnating buffs improves cutting properties of the buff throughout its life; improves flexibility; and provides a texture that holds buffing compound better.

Manufacturer: American Buff Co., 2414 S. LaSalle St., Chicago 16, Ill.

For more data circle **37** on Reader Service Card

★ ★ ★

Aluminum Etchant

A product called Alsite, recently introduced and patented by Kelite Corp., etches aluminum and its alloys.

Produced as a dustless powder, this material is added to water to make up a bath that provides a controlled etch. The etch rate is catalytically accelerated, exceeds that of caustic soda.

The etchant produces a controlled foam that helps to prevent "caustic spray" in the air.

Alsite also prevents formation of aluminum oxide scale on tank walls and heater parts.

Manufacturer: Kelite Corporation, 81 Industrial Rd., Berkeley Heights, New Jersey.

For more data circle **38** on Reader Service Card

Barrel Finisher

Description: A barrel finishing machine recently introduced by Globe Barrel Finishing Equipment Div. of Casalbi Co. has a one-piece molded rubber barrel, which has the advantage of not having cracks or seams to catch media and compound and contaminate subsequent runs.

The entire barrel is driven by separate rollers, can be used for almost any barrel finishing operation.

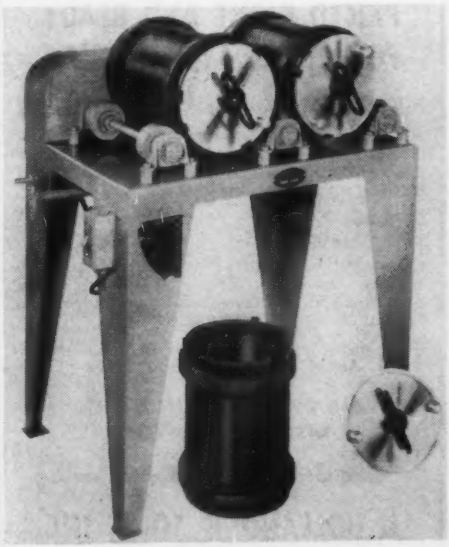
The barrel cover is made of aluminum. It locks into position by twisting the handle, makes the barrel water tight.

Three integrally molded ribs inside the barrel help to agitate the parts and media.

Typical Applications: Deburring, descaling, polishing, radiusing, grinding, burnishing. Can be used for experimental runs and for finishing small stampings, screw machine parts, watch and clock parts.

Manufacturer: Globe Barrel Finishing Equipment Div., The Casalbi Co., Jackson, Mich.

For more data circle **39** on Reader Service Card



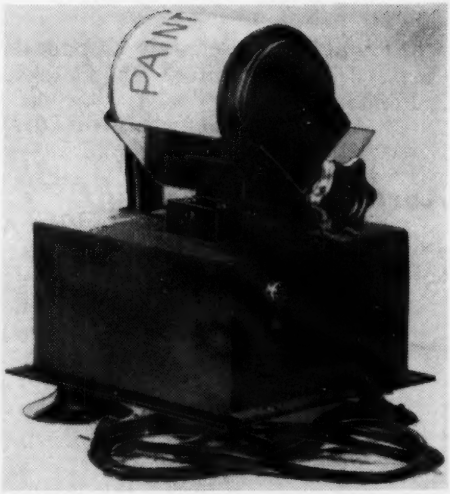
Globe Model RD/2 Barrel Finishing Unit

Paint-Mixing Machine

A machine employing a "pitch-tilt" action to mix paints while still in the can has been introduced by Beck Equipment Co.

The unit thoroughly mixes all kinds of paints or liquids, even tightly caked pigments, metal-pigmented paints, transparent-color paints and house paints.

The machine consists of a frame which houses the 60-cycle 110-volt electric motor as well as the gearing and eccentric which drives a rubber connecting rod to vibrate the cradle as it rocks on its two rubber bearing blocks. The oil bronze bearings require no oiling. Rubber gripping pads, tightened by a hand-knob, hold either round or square cans in the cradle. Containers cannot fly loose.



Beck Equipment's Paint Mixer: for quick mixing of paints without opening the container

Four rubber suction feet cushion the vibration and prevent creeping.

Two sizes are available — one for gallons and smaller and one for quarts and smaller.

Manufacturer: Beck Equipment Co., 3350 W. 137th St., Cleveland 11, Ohio.

For more data circle **40** on Reader Service Card

★ ★ ★

Disposable Plastic Gloves

Description: Plastic gloves that are rugged enough to be re-usable and inexpensive enough to be disposable are available in large, medium, and small

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BUFFING AND POLISHING EQUIPMENT

100 Hammond—Divine—U. S. Electric—Holland — Standard Electric — L'Hommedieu single speed and variable speed buffing and polishing machines. 1 to 20 HP.

6 Rotary Machines: Hammond—Acme—Packermatic.

Complete buffing systems for above machines, including hoods, cyclones, dust boxes, pipes, motors and blowers; various sizes.

Semi-automatic machines: Buffalo—Hammond Acme—Divine—Production.

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MORSE

VERTICAL DRUM TRUCK

ROCK-A-DRUM

Picks up 55 gal. drums, rolls them over for side draining. Becomes a rugged stand on 3″ wheels.

MORSE MFG. CO., INC. 762 W. Manlius St. East Syracuse, N.Y.

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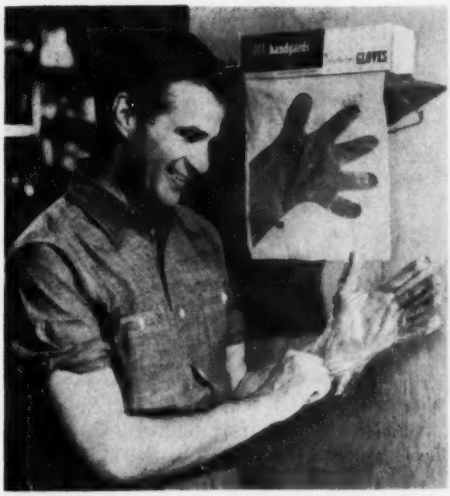


Disposable Gloves: rolls of 12 to 1000

sizes, packaged in rolls of 12 to 1,000.

Known as Handgards, the gloves are made of 1¾ mil polyethylene, heat sealed by a machine that ensures a waterproof product.

Industrial gloves of heavier weights, longer lengths with perforated backs for additional ventilation, or any special color or design are also available.

Manufacturer: Plasticsmith, Inc., P. O. Box 1071, Pittsburgh, Calif.

For more data circle **41** on Reader Service Card

★ ★ ★

Dust Collectors

Description: The Torit line of cyclone-separator-type dust collectors has been modified by making radial fans standard equipment on all models. This change, the company states, increases performance on all models, as these fans move more cubic feet of air per minute than the fans previously used, also operate more efficiently against higher static pressures.

Another advantage of the fans, the manufacturer states, is that they resist clogging in unusual situations.

Torit's cyclone separator models are designed for collecting large volumes of dust, lint and buffing compound.

In operation, dust-laden air is drawn into the collector, where spiral baffles direct it into a whirlwind motion. Dust particles are precipitated out of the air stream by centrifugal force and settle into the dust reservoir below.

Manufacturer: Torit Manufacturing Co., 292 Walnut St., St. Paul 2, Minnesota.

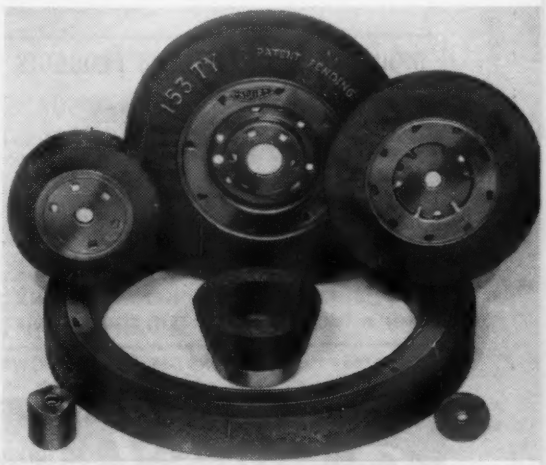
For more data circle **42** on Reader Service Card

★ ★ ★

Power Brush

A power brush recently introduced by Osborn Manufacturing Co. is said to serve as an intermediate between the accepted uses for wire brushes and the applications normally filled by abrasive finishing. Called the "TY" Brush, it is made of wires encased in a bonding agent that withstands severe brushing pressures and moderates work surface temperature, while wearing away at approximately the same rate as a standard wire brush.

Characteristics: Limited flexibility gives strong brushing action; maintains uniform brushing pressure: pro-



Osborn TY Brush Line: wires molded in a bonding agent bridge the gap between standard wire brushes and abrasive finishing tools

vides positive control of brush face width; provides high degree of brushing uniformity from part to part.

Applications: Scale removal, burr removal, blending surface junctures and sharp edges, improving surface finishes, flash removal, other cleaning and finishing uses.

Manufacturer: Osborn Manufacturing Co., 5401 Hamilton Ave., Cleveland, Ohio.

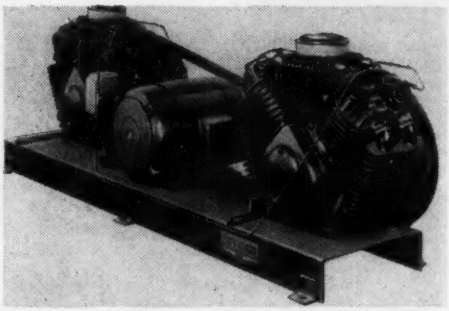
For more data circle **43** on Reader Service Card

★ ★ ★

Large Air Compressors

Description: Air compressors recently introduced by the DeVilbiss Co. are rated at 20 and 25 horsepower, produce 125 and 175 pounds pressure.

Specifications: Double compressor units; will displace from 96.4 to 129 cubic feet of air per minute; pressure switch, magnetically controlled unloaders; magnetic starter with selector switch for automatic start-stop operation or constant-speed unloading;



Large Compressor: 20-25 h.p., 125-175 lbs.

available with vertical air receivers and for remote installation.

V-type multiple-cylinder compressors have bore in first stage of 4½ inches, 2½ inches in the second stage; stroke, four inches; length, 88 inches, height 28⅜ inches, width 28 inches.

Catalog sheet is available from the manufacturer.

Manufacturer: The DeVilbiss Co., Toledo 2, Ohio.

For more data circle **44** on Reader Service Card

★ ★ ★

Cleaner for Powdered Metal Parts

A product called No Bleed removes entrapped or absorbed blackening salts from powdered metal parts, prevents bleeding, blooming, flowering and weeping out.

The solution is used as received at 240-250 deg. F. Parts remain in the solution for 15 to 30 minutes. Parts are removed from the bath, allowed to dry and then re-oiled.

Manufacturer: Heatbath Corporation, Springfield 1, Mass.

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Abrasive Powders

A hard abrasive (crystal gem-quality garnet) classified as to fineness within three microns A.P.S. is available in standard powder grades ranging from 3 to 35 microns A.P.S. The manufacturer recommends this abrasive for use in polishing metal.

Manufacturer: Barton Mines Corp., North Creek, Warren County, N. Y.

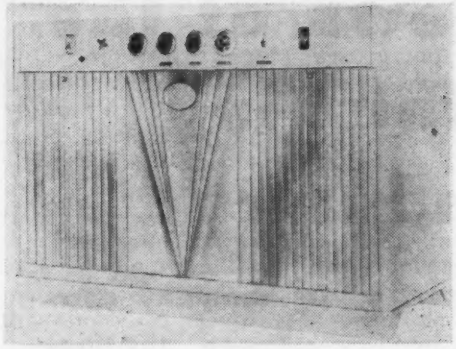
For more data circle **46** on Reader Service Card

★ ★ ★

Plating and Anodizing Solution Cooler

A refrigeration unit called the Kol-Flo is specially designed for use in cooling plating and anodizing solutions. A "complete package," it contains all the necessary equipment and controls for an entire system.

Units are available in sizes from one to 100 h.p., piped with copper for cold-water recirculation and lead or stainless steel for direct-acid cooling.



Kol-Flo "Packaged" Cooler: for controlling temperature of plating and anodizing solutions

Manufacturer: Kol-Flo Kooler Co., Kol-Flo Building, Bayonne, N. J.

For more data circle **47** on Reader Service Card

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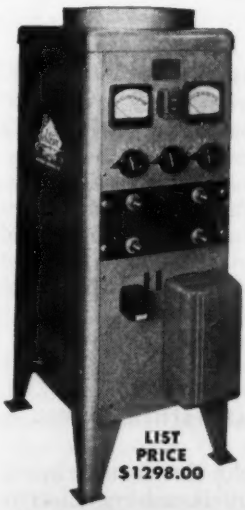
For more data on products described, use READER SERVICE CARDS



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Heavy duty transformers, husky fan motors, built to last. Built-in voltage regulation, meters or remote control optional.

Units operate from minus 40°F.—225°F. at 50—50,000 amperes D.C. No failures in units working 4 years "round the clock". Investigate "LEKTRON" before you buy—get quality of product backed by a Company of integrity at a "price you can afford"

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Illustrated—750 amperes 2-16 volts to 1,500 ampere 1-8 volt D.C. full wave type with built-in regulator. For use with 208, 220 or 440 volt 3 phase A.C. 20" x 26" x 56½" steel cabinet in grey hammerloid. Weight 725 lbs.

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News of the Finishing Industry

- company news
- new positions
- new plants
- meetings

NEW PLANTS

DeVilbiss Expands Cleveland Branch

DeVilbiss Company's recently expanded Cleveland branch now carries a full line of spray painting and finishing equipment, hose and hose connections, air compressors, and a complete stock of service parts for all DeVilbiss products.

Complete repair service by factory-trained mechanics now is available.

Univertical Foundry Expands Facilities

Univertical Foundry and Machine Co. has added 20,000 square feet to its main office and plant in Detroit.

The company supplies the electroplating industry with rolled, cast and forged copper, nickel, lead, tin, zinc, cadmium and brass anodes.

Dow Establishes St. Louis Caustic Terminal

The Dow Chemical Company will establish terminal facilities for 50 per cent caustic soda at the Associated Sales and Supply Company's public terminal in St. Louis.

Oliver E. Beutel, manager of distribution and traffic for Dow, said construction will start at once. Facilities are expected to be in full operation in January.

COMPANIES

Diversey Grants Pfizer License for Aluminum Etching Processes

The Diversey Corporation, Chicago manufacturer of chemical specialties for the metal industries recently announced that Chas. Pfizer & Co., Inc., Brooklyn, New York, had taken a non-exclusive license under Diversey's U. S. Patent No. 2,650,875, covering a method of etching aluminum and aluminum base alloys. The license, which extends to Pfizer's customers, also includes certain Diversey Canadian patents relating to aluminum etching.

Roto-Finish Appoints Wisconsin Distributor

Abrasive Specialists of Milwaukee has been appointed Wisconsin distributor for Roto-Finish Co., Kalamazoo, Mich. manufacturer of barrel finishing machines, abrasive media and compounds.

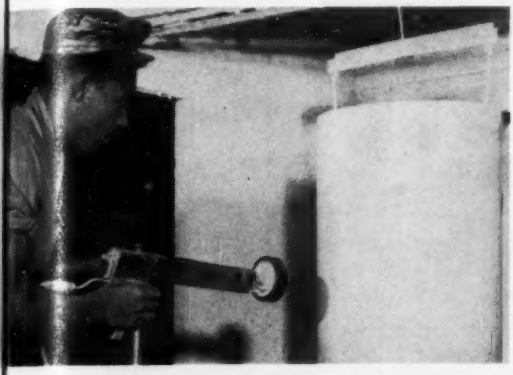
The new distributor has warehouse facilities in Milwaukee.

Ransburg Demonstrates Hand-Held Electrostatic Gun at Metal Show

A new hand-held electrostatic spray gun introduced by Ransburg Electro-Coating Corp. at the Metal Show is the first to make possible electrostatic spray application of paint with hand-held apparatus. Previous equipment

made by the company for electrostatic spray was limited to installations where the guns could be operated automatically as objects to be painted moved by on a conveyor.

The hand-held gun, which incorporates an atomizing bell similar to



Operator demonstrates use of hand-held electrostatic spray gun in actual production

that used in Ransburg No. 2 Process automatic-spray installations, is built so that it can be used with absolute safety, the manufacturer states.

Enthone Named Exclusive Distributor for Abbey Process Automation

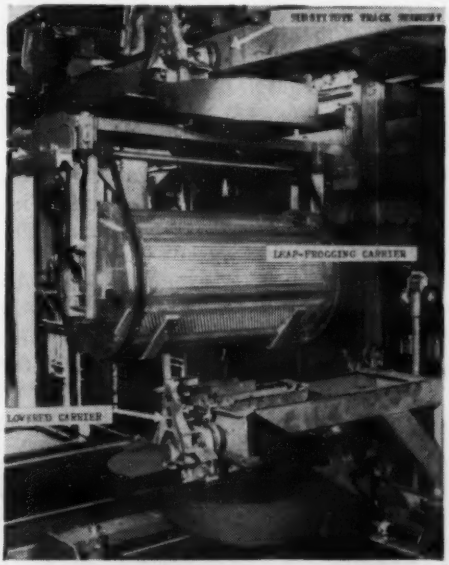
Abbey Process Automation, Inc. of Long Island City, New York has appointed Enthone, Inc. of New Haven, Connecticut, subsidiary of American Smelting and Refining Company, exclusive distributor for the Abbey Process Automation System of conveyors.

The agreement covers that portion of the United States east of the Rocky Mountains. Enthone is also authorized to sell Abbey equipment on a non-exclusive basis in the remainder of the United States and in Canada.

The two firms will pool their engineering talent in applying the Abbey Automation System to plating and finishing installations. The Abbey conveyors will be built at the Abbey plant while tanks and accessory equipment will be manufactured by Enthone.

The Abbey Automation System consists of several patented devices which are said to give fully automatic equipment the flexibility of hand operation.

Vertical movements of work carriers in and out of processing tanks do not have to be synchronized with horizontal or "transfer" movements from one tank to the next as on conventional plating machines. Work carriers have the ability to "leapfrog" over other carriers which are in the lowered position, thereby eliminating the necessity of having all carriers move in a fixed sequence. Each elevator station is an independent unit. This simplifies the insertion or removal of stations to meet changing production requirements, Abbey says.



"Leap Frogging" feature of Abbey Automation System is portrayed above. Use of substitute track segment, which falls into place when first carrier is lowered, allows "leapfrogging" carrier to pass over lowered carrier. This makes possible cell-type plating on an automatic conveyor and incorporation of several processing cycles on one conveyor.

Barrett Appoints Chicago Rep: Anderson & Associates

Leon J. Barrett Company has appointed George H. Anderson & Associates, Chicago, as sales engineers for the company's centrifugal equipment in Chicago, northern Illinois and northwestern Indiana.

Enthone Absorbs Comco Subsidiary

Enthone, Inc., New Haven, Connecticut, a subsidiary of American Smelting and Refining Company, will take over and continue in its own name the business of its wholly owned equipment subsidiary, Comco, Inc.

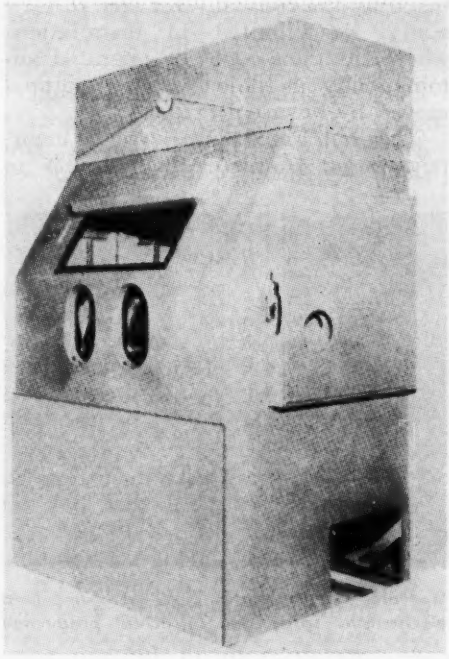
Comco's manufacturing facilities will be integrated with Enthone's and operate as the equipment department of Enthone.

J. J. Martin, Jr., general manager of Comco, has been appointed general manager of the new Enthone equipment department.

Stevens Appointed Hydra-Blast Distributor

Frederic B. Stevens, Inc., Detroit manufacturer of finishing equipment, is now distributing Hydra-Blast supplies and equipment.

Hydra-Blast is a manufacturing division of Automation Services, Inc., of Detroit, Michigan. It produces wet-blasting equipment and materials for a process in which water and abrasives are ejected from a blast gun by means of compressed air. This process is used for descaling, wet-honing, deburring, blending and cleaning.



Hydra-Blast Cabinet 4050: now being distributed by Frederic B. Stevens, Incorporated

American Buff Builds New Facer-Trimmer Machine

To produce accuracy and balance in its buffs for use in high-speed metal-finishing operations, American Buff Company, Chicago, has designed and built its own facer-trimmer machine.

In order to assure a perfectly concentric face on any type of buff, the buff is revolved at a speed approximating that at which it will be used. At this speed, it is faced off by the trimmer-facer unit, which produces a true diameter in relation to the arbor. Facing-off at speeds slower than use-speeds would produce inaccurate buffing and uneven results. This controlled high-speed trimming is said to effect a better-appearing, balanced buff.

GRANDPA USED PIPE COILS

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which TAKES THE PLACE of pipe coils, didn't exist. The Dean is far superior for phosphating, degreasing, plating, cleaning, drying, etc. Tell us your heat transfer problems.

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DEAN PRODUCTS, INC. 622 Franklin Ave.
BROOKLYN 38, N. Y. Tel. Sterling 9-5400

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Octagon Process Forms Customer-Service Division

Lionel DeWaltoff

Octagon Process, Inc., Staten Island, N. Y. manufacturer of cleaners and metal - treatment chemicals, has formed a customer - service division.

A trained group of chemists and engineers will aid production and development engineers in solving problems.

A fully equipped research and development laboratory has been set up for the new group.

Octagon has appointed Lionel DeWaltoff as technical director, to head the new division.

Sarco Announces Scholarship Program

A college scholarship program for sons and daughters of employees of Sarco Co., Inc., and Sarcotherm Controls, Inc., has been announced jointly by H. L. Simmons and L. Barfus, presidents respectively of the two affiliated manufacturers of steam traps, temperature controls, and heating specialties.

Sel-Rex to Hold Seminar on Gold Plating

Sel-Rex Corporation will hold a seminar entitled "Developments in Gold Electroplating Technology" on January 29 at the Rhode Island School of Design Auditorium, in Providence, Rhode Island.

Purpose of the seminar will be to discuss the new Federal Trade Commission designations "Gold Electroplate" and "Heavy Gold Electroplate." Sel-Rex will also demonstrate a new method of applying gold coatings directly from the bath, according to E. C. Rinker, technical director of the firm's Precious Metal Division.

Dr. Karl Schumpelt, chief electrochemist at Sel-Rex, and Al Korbelak, manager of New Products Development, will also serve as discussion leaders.

Admission will be by invitation from Sel-Rex.

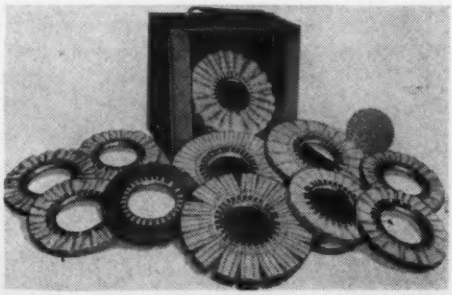
Commercial Plastics to Distribute Teflon Hose for American Brass

Commercial Plastics & Supply Corp. has been appointed distributor in the New York and Newark areas for Teflon flexible hose products manufactured by The American Brass Company. Commercial will handle the complete Teflon flexible hose line, which has good resistance to heat, chemicals, and corrosion.

Demonstrator Kit for American Buff Representatives

American Buff Company representatives now carry a demonstrator kit with the full line of buffs offered by the Chicago manufacturer.

Types of buffs in the kit include bias cloth, unit cloth (sewed or unsewed), pleated cloth, bias sisal, unit sisal, open bias sisal, and uniflex abrasive buffs in centerless and permanent-center construction.



American Buff Company's Demonstrator Kit

The company also markets six treatments for these buffs, including (1) "black—for extra toughness and longer life; (2) "Oily L"—which softens and lubricates; (3) "Golden"—to increase body firmness, strength, and resistance to oil, water, and fraying; (4) "Abrasive"—a grain-in-depth texture particularly valuable on contoured jobs; (5) "Oily SC" — for extra flexibility to reach into crevices, recesses, and around contours; (6) "Flameproof" — to increase safety at high speeds and during long contacts.

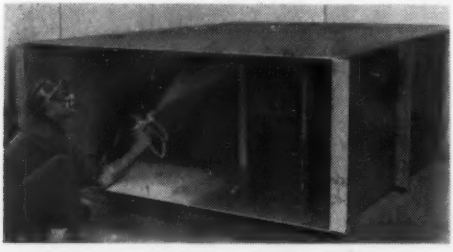
Federated Metals Moves St. Louis Office

The St. Louis sales office of the Federated Metals Division of American Smelting and Refining Company has moved from 4041 Park Avenue in St. Louis to Federated's new plant at Alton, Illinois.

H-VW-M Sets Up Plastisol Shop

Hanson-Van Winkle-Munning Company has installed facilities for applying plastisol coatings to new plating equipment, will also apply these coatings to plating equipment and accessories on a job basis.

The new facilities enable H-VW-M to perform all related operations, including sandblasting, priming, preparatory baking, coating by both spray and dip processes, and final baking after application of the plastisol.



Applying Plastisol: new facilities at H-VW-M

Allied Research Consolidates Brand Names

Allied Research Products, Inc., has consolidated its more than 100 materials and pieces of equipment for the finishing industry under five major brand names. They are as follows: "Iridite," which includes all chromate conversion coatings made by the company; "Irilac," used to designate clear protective coatings for metals; "Isobrite," to identify plating brighteners; "ARP," to designate processes, chemicals and supplies not included in the other categories; and "Wagner," to include all former Wagner Brothers equipment, including rectifiers, automatic and semi-automatic plating machines, unloaders, and so on.

Some specific brand names have been retained in the reclassification. These include "Flat-Top" and "Lectrocop" for specific shapes of anodes.

NEW POSITIONS

Dr. Howard L. Gerhart has been appointed director of research and development for the Paint and Brush Division of the **Pittsburgh Plate Glass Company.**

Now serving as research director, Dr. Gerhart will also assume responsibility for the Development and Technical programs of the Paint and Brush Division, which has recently expanded its work in these fields with addition of a new Development Center at its Springdale, Pa., Research Center.

★ ★ ★

Elliott Henry and **Brett Hollerith** have joined **Branson Ultrasonic Corp.,** Stamford, Conn., manufacturer of ultrasonic gaging and cleaning equipment.

Mr. Henry has been named senior development engineer.

Mr. Hollerith will be an applications engineer.

Sel-Rex Corporation has appointed **Jerry Ross** manager of its Equipment Division and **Alexander Korbelak** manager of Marketing and New Product Development, Precious Metals Div.

Sales engineer with the company since 1949, Mr. Ross had been in charge of plating equipment and supplies sales for the past two years. In his new position, he will be responsible for engineering, pricing and surveys for major equipment and plating installations.

Formerly sales manager of the Precious Metals Division, Mr. Korbelak's duties will include new applications and new market exploration for Sel-Rex's precious metals electroplating processes. He will work closely with the division's technical staff in the development of new products for which his field work may have uncovered a need.

A. Korbelak

Jerry Ross

★ ★ ★

Jerome J. Hargarten has been appointed service manager of the Chlorine Products Division for the **Du Pont Company's** Electrochemicals Department.

He will direct activities of solvents technical representatives in Wilmington, Del., and will coordinate metal cleaning work in the field and at the new Electrochemicals Department's Sales Technical Laboratory at Chestnut Run.

Apex Alkali Products Company, Philadelphia manufacturer of cleaning compounds, has appointed **George W. Finley, Jr.** chief chemist.

Mr. Finley formerly had been with International Chemical Company, Philadelphia, where he was engaged in research on industrial lubricants and cleaning compounds.

Merritt L. Smith

George W. Finley, Jr.

Merritt L. Smith has been appointed director of advertising and publicity for **Metal & Thermit Corp.**

In this position, Mr. Smith will have responsibility for the company's advertising department and advertising and publicity agencies, and will develop an expanding public relations program.

Mr. Smith joined Metal & Thermit in 1932, has been advertising manager, assistant sales manager, sales promotion manager and executive advisor for the company.

★ ★ ★

Techline Division, Wheelabrator Corporation, has appointed several sales representatives.

The representatives are **Charles William Thomas,** Arcadia, Calif., **Richard Dale Taylor,** Phoenix, N. Y., **Ruel K. Shumway,** St. Louis, Mo., **Donald H. Schultz,** Elm Grove, Wisconsin, and the **Industrial Sales and Engineering Company, Inc.,** Kalamazoo, Michigan.

Walter T. McCoy, Jr., formerly an industrial sales engineer in the Chicago office of **The R. C. Mahon Co.,** has been appointed manager of the Detroit firm's New York industrial sales organization.

He succeeds Eugene Bordinat, who retired recently after 24 years service with the company.

★ ★ ★

John F. Howe, Jr., formerly of the industrial sales department of the Sherwin-Williams Company, has been named sales manager of **Industrial Finishes Company,** Philadelphia.

Mr. Howe will supervise the activities of an expanding sales force in the Philadelphia territory, also the work of agents throughout the country.

★ ★ ★

Nu-Matic Grinders, Inc., Cleveland manufacturer of polishing wheels, has appointed **Arthur Raske, Jr.,** president. Mr. Raske had been executive vice president of the company.

★ ★ ★

Van der Horst Corporation of America has appointed **Dr. Hyman Chessin** as director of research and development.

Lee Alderuccio, Dr. Hyman Chessin

Named to assume the post of assistant director of research and development is **Lee Alderuccio.**

Don Johnson has been promoted to sales manager of **Almco, Queen Products Division. Al Sartor** moves up to take Mr. Johnson's former job: manager of the company's Detroit branch. **Bruce Hardin** has been appointed sales engineer in the Michigan area to fill the vacancy left by Mr. Sartor's promotion. And **George Shelson** becomes sales coordinator of Almco, Queen Products Division, taking over Mr. Hardin's former duties.

Al Sartor

Bruce Hardin

Don Johnson

★ ★ ★

The Dow Chemical Company has announced two personnel changes in its sales department.

James W. Harris, manager of organic chemicals sales since 1951, has been appointed assistant to Leo B. Grant, sales manager of the Chemicals Department.

The name of the product group—organic chemicals—has been changed to organic chemical intermediates, and **Earl H. Farnham** has been named manager, succeeding Mr. Harris.

HONORS

U. of Buffalo Honors Carborundum Founder

The University of Buffalo has named its new chemistry building now under construction the "Edward Goodrich Acheson Hall of Chemistry" as a memorial to the founder of the Carborundum Company, one of America's most distinguished inventor-scientists.

Dr. Acheson's discoveries and researches in electrochemistry and electrometallurgy resulted in a diamond-like abrasive soon trade named "Carborundum." The new abrasive made possible modern mass production. Without "Carborundum" silicon carbide and the other man-made abrasives that followed it, the manufacture of precision ground, interchangeable parts essential to economical large-scale production would have been impossible.

The Carborundum Company which Dr. Acheson formed in 1891 to manufacture and market silicon carbide has grown to be one of the giants of the country, with an ever-broadening group of products, annual sales of more than $100,000,000, more than 7,000 employees in the United States and Canada, and 33 plants in 11 countries.

The Acheson Hall of Chemistry will be a permanent memorial to Dr. Acheson on the Niagara Frontier where he achieved his most important successes as an inventor and industrialist.

Diversey Board Chairman Honored

Herbert W. Kochs, chairman of the Diversey Corporation, Chicago manufacturer of chemical products and detergents for industrial use, has been elected president of the National Probation and Parole Association at this year's annual meeting, it was announced by Will C. Turnbladh, association director.

TRAINING COURSES

Electroplaters' Certificate Course

The Milwaukee Branch A.E.S. will sponsor a plating course at Racine Adult & Vocational High School, Milwaukee, beginning on January 7.

The course will be titled *Fundamentals of Electroplating,* and sessions will be held from 7 to 9 P.M. every Wednesday through March 11. Fee, $5.00.

Further information and applications may be obtained from Rodney H. Olsen, Shephard Plating Co., 939 N. Erie St., Racine, Wisconsin.

MEETINGS

Chicago Branch A.E.S. Annual Educational Session and Banquet

The 47th Annual Educational Session and Banquet of the Chicago Branch, American Electroplaters' Society, will be held on Saturday, January 31, at the Conrad Hilton Hotel in Chicago. Raymond F. Ledford, president of Chemray Corp., is chairman.

The Educational Session will begin at 2:00 P.M. in the Waldorf Room. Program is as follows:

Fifty Years of Plating Progress, by Simon P. Gary, associate director, Scientific Control Laboratories, Inc., Chicago.

Symposium on Modern Nickel Plating. Panel members: Clarence H. Sample, supervisor of the electroplating section, Development and Research Div., International Nickel Co., Inc., New York, N. Y.; Dr. M. M. Beckwith, technical director, Harshaw Chemical Co., Cleveland, Ohio; Myron B. Diggin, vice president of Hanson-Van Winkle-Munning Co., Matawan, N. J.; Dr. Richard B. Saltonstall, technical director of the Udylite Corporation.

The dinner and floor show will be held in the Grand Ballroom of the Conrad Hilton at 7:00 P.M.

Tickets available from Paul Glab, 882 N. Paulina St., Chicago.

A. E. S. GOLDEN JUBILEE CONVENTION,
5th Industrial Finishing Exposition
Detroit, Michigan, June 14-19

New York Branch A.E.S. Annual Meeting

The New York Branch A.E.S. will celebrate its golden anniversary at the branch's Annual Educational Session and Banquet, to be held on February 7 at the Hotel Statler, New York City.

Joseph Rambecki is in charge of arrangements for the annual meeting.

Arthur Carlson has arranged the educational program: *Copper-Nickel-Chromium Exposure Tests on Steel,* by Walter Pinner, manager, Electroplating Development, McGean Chemical Co., Cleveland; *Nickel Plating for the Last Fifty Years,* by Dr. D. Gardner Foulke, head of research, Hanson-Van Winkle-Munning Co., Matawan, N. J.; *Corrosion Studies with Various Combinations of Nickel and Chromium Plate,* by Dr. Henry Brown, head of research, Udylite Corp., Detroit.

Reservations for this annual meeting may be obtained by writing to Angelo Amatore, 9226 Foster Ave., Brooklyn 36, N. Y.

SOCIETIES

N.A.M.F. Announces New Board Members

Three Chicagoans and one Washington metal finishing executive have been named to the board of directors of the National Association of Metal Finishers.

Arthur G. Pierdon, president of Art Metal Finishing Co., Inc., Washington, D. C., was appointed to fill the unexpired term of Amos Judd of Baltimore, Md. who resigned recently because of ill health.

Other new members of the board include Robert L. Giesel, Adolph Plating, Inc.; J. William Carlson, Arrow Plating Co.; and William R. Crawford, Chrome-Rite Company, all of Chicago.

Ultrasonic Manufacturers' Association Elects New Officers

New officers for the Ultrasonics Manufacturers Association were elected at the annual meeting of the association, recently held in Cleveland, Ohio.

Elected to fill vacancies on the board of directors were Norman G. Branson, president of Branson Ultrasonic Corporation, Stamford, Conn.; Harvey B. Foulkes, chief engineer of Cavitron Equipment Corp., Long Island City, N. Y.; Stanley E. Jacke, supervisor of research and development, Detrex Chemical Industries, Inc., Detroit; and Jack T. Welch, assistant vice president of Sheffield Corporation, Dayton, Ohio.

Samuel Bagno, chief engineer of Waler Kidde & Co., Inc., Newark, N. J., W. C. Potthoff, vice president of Aeroprojects, Inc., West Chester, Pa., and Robert L. Rod, president of Acoustica Associates, Inc., Mineola, Long Island, N. Y., are serving the second year of a two-year term on the board of directors.

Officers elected by the association are Jack T. Welch, president, Norman T. Branson, vice president, Robert L. Rod, secretary, and Stanley E. Jacke, treasurer.

Dr. A. K. Graham, John P. Nichols Speak at Detroit Branch A.E.S. Annual Meeting

The recent 21st Annual Educational Session of the Detroit Branch, American Electroplaters' Society heard Dr.

Fig. 1—Three of the "Hosts" at the suppliers' cocktail party. Left to right: Robert C. Trees, The Udylite Corp., publicity chairman for the A. E. S. Golden Jubilee Convention to be held in Detroit June 14 to 19, 1959; Howard J. McAleer, Formax Manufacturing Corp., chairman of the 1959 Industrial Finishing Exposition; Carl O. Durbin, Engineering Division, Chrysler Corp., chairman of the traditional Detroit-Branch Annual Meeting and Party.

Fig. 2—The party was well attended and provided opportunity for renewing acquaintances.

Fig. 3—Members of the American Electroplaters' Society Executive Board were caught by the candid camera just prior to Detroit Banquet. (PRODUCTS FINISHING Staff Photos)

A. Kenneth Graham, president of Graham, Savage & Associates, Inc. speak on *Electroplating — Yesterday, Today and Tomorrow*. Dr. Graham and Donald M. Bigge of Chrysler Corporation's Engineering Division, who commented on the paper, pointed out areas in which the electroplating industry needs to devote time and effort to improve deposits.

John P. Nichols, A.E.S. executive secretary, spoke on *The A.E.S. at its Half-Century Mile Post*, commenting on the founding and development of the world-wide organization of electroplaters and suppliers.

A group of suppliers combined to sponsor a cocktail party before the Detroit Branch Annual Banquet and a party after the dinner and floor show. The Metal Finishing Suppliers' Association has promoted the idea of collective entertainment and parties at A.E.S. functions for some time, and the group-sponsored parties have been tried at Philadelphia, Newark and other A.E.S. Branches. Perhaps other groups will also find the system successful.

NECROLOGY

Victor F. Stine

Victor F. Stine, 65, president of the Pangborn Corporation, Hagerstown, Md., died on October 29.

Mr. Stine started his career with Pangborn in 1912. He served the company in sales and many administrative capacities, was elevated to the presidency two years ago.

Harvie J. Johnson

Harvie J. Johnson, vice president of Belke Manufacturing Company and member at large of the American Electroplaters' Society, died in Springfield, Ohio, on November 28th. He was 59.

Mr. Johnson had been associated with the Belke Manufacturing Company and the plating industry since 1932.

Harvie J. Johnson

Verne E. Minich

Verne E. Minich, 91, founder of Wheelabrator Corporation, Mishawaka, Indiana, and honorary chairman of the board, died Saturday, December 13, in New York City following an illness of several months.

Mr. Minich built the company that eventually became the world's largest manufacturer of airless abrasive blasting equipment and steel abrasives from an organization that began as the Sand Mixing Machine Co. in 1908.

The name of the original company was changed to American Foundry Equipment Company as a line of antipressure sandblast cleaning machines was introduced.

Consolidations with other foundry-equipment manufacturing plants followed until finally in 1926 the headquarters and main plant of the firm were established in Mishawaka, Indiana.

Later, with the introduction of the Wheelabrator airless abrasive blast cleaning unit the company changed its name to American Wheelabrator & Equipment Corporation and finally in 1955 the name was changed to Wheelabrator Corporation.

MEETINGS of INTEREST to FINISHERS

Jan. 17. Annual Educational Session and Banquet, Grand Rapids Branch, A. E. S., Pantlind Hotel, Grand Rapids, Michigan.

Jan. 31. Annual Meeting and Banquet, Chicago Branch, A. E. S., Conrad Hilton Hotel, Chicago, Ill.

Jan. 31. Annual Educational Session and Dinner Dance, Cleveland Branch, A. E. S., Hotel Carter, Cleveland, Ohio.

Feb. 7. Annual Educational Session and Banquet, New York Branch, A. E. S., Hotel Statler Hilton, New York, New York.

AGATEEN

A large T.V. manufacturer writes:* "After exhaustive tests AGATEEN #13C is satisfactory for use on T.V. metal masks."

*Name on application.

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Feb. 13-14. Annual Educational Session and Banquet, Dixie Regional Group, A. E. S., Dinkler Plaza Hotel, Atlanta, Ga.

Feb. 14. A. E. S. Sixth Interim Meeting, Sponsor — Dixie Regional Group, Host — Southeastern Branch, A. E. S., Dinkler Plaza Hotel, Atlanta, Georgia.

Mar. 7. Annual Educational Session and Banquet, Rockford Branch, A. E. S., Faust Hotel, Rockford, Ill.

Mar. 7. 13th Annual Meeting and Dinner-Dance, Dayton Branch, A. E. S., Hotel Biltmore, Dayton, Ohio.

Mar. 21. Annual Educational Session and Banquet, Los Angeles Branch, A. E. S., Beverly-Hilton Hotel, Los Angeles, Calif.

Apr. 4. Fifth Tri-State Regional Meeting, A. E. S., Host—Louisville Branch, Louisville, Ky.

June 14-19. Golden Jubilee Convention and Industrial Finishing Exposition, Fifth International Conference on Electrodeposition, Detroit, Mich.

PRODUCT LITERATURE

48. Replacement Rectifier Stacks
Data sheet describes replacement rectifier stacks for d.c.-power supplies. Electronic Rectifiers, Inc., 2102 Spann Ave., Indianapolis 3, Indiana.

49. Trash to Cash
"Handy and Harman Waste Disposal Guide" describes many forms of industrial wastes that are often sold as low-value scrap but actually contain valuable precious metals. Examples include vacuum-system dust, wiping rags, solutions, sludges, grindings and turnings. The bulletin lists specific types of scrap materials that have salvageable value. Handy & Harman, 82 Fulton St., New York 38, N. Y.

50. Anodes, Plating Chemicals
Bulletin AC-111. Eight pages about anodes and plating chemicals. Details on composition, shapes and specific applications. Includes description of recently introduced Lo-Sludge nickel anodes. Discusses criteria for anodes, includes specifications for various types. Hanson-Van Winkle-Munning Co., Matawan, New Jersey.

51. Filtration for the Plating Industry
Bulletin EP-100. 15 pages. Photos of and information on typical installations; construction details for various solution filters; operating cycles; information on recovery systems. Industrial Filter & Pump Mfg. Co., 5904 Ogden Ave., Chicago 50, Illinois.

52. Coatings for Vacuum Metallizing
Four-page folder. Organic coatings for use before and after depositing a vacuum metallized film. Typical applications, use data, information on first-surface coatings. Jema-American, Inc., 181 South St., Newark 5, N. J.

53. Tumbling and Burnishing Products
A 10-page booklet shows various types of burnishing barrels, tumbling barrels, burnishing materials, tumbling abrasives. Chas. F. L'Hommedieu & Sons Co., 4521 Ogden Ave., Chicago, Ill.

54. Smooth Surface for Aluminum and Steel
Technical Data Sheet No. 81. A three-page usage and instruction sheet on Electro-Gleam 55, a solution that can be used for brightening steels (including stainless steel) and aluminum. Deburrs, removes sharp edges, improves corrosion resistance and adherence of plated coatings, reduces friction. MacDermid, Inc., Waterbury, Conn.

55. Safety Clothing
Six-page booklet compares chemical resistance and safety factors of nine synthetic fabrics used for clothing. Milburn Co., Detroit 7, Mich.

56. Drum-Handling Tools
Literature on a line of drum-handling tools and equipment: drum upenders, drum wrenches, carts and so on. Morse Mfg. Co., Inc., 762 W. Manlius St., E. Syracuse, N. Y.

57. Paints
Twenty pages on the company's facilities, services and products. O'Brien Corporation, South Bend 21, Indiana.

58. Paint Test Panels
Form No. A7310 describes phosphatized test panels made under carefully controlled conditions to assure uniformity for use in testing paints. Parker Rust Proof Co., 2172 E. Milwaukee Ave., Detroit 11, Mich.

59. Mercury-Actuated Temperature Controls
Form No. 1086. Four pages on temperature controls built for service in controlling temperature of corrosive plating solutions. Partlow Corporation, New Hartford, N. Y.

60. Plating Room Floor Coating
Bulletin CP-627 tells about Penntrowel, a surfacing material that protects floors against acids and corrosives. Pennsalt Chemicals Corporation, Natrona, Pa.

61. Electrostatic Hand Gun
A 4-page folder tells how the new Ransburg hand-held electrostatic spray gun works, what it will do. Includes photos and diagrams of the new gun. Ransburg Electro-Coating Corp., P. O. Box 7822, Indianapolis 23, Indiana.

62. Bias Buffs
Information on the advantageous features of Schaffner bias buffs. Schaffner Manufacturing Co., Inc., Schaffner Center, Emsworth, Pittsburgh 2, Pa.

63. Titanium Anodizing Racks
Folder describes and illustrates titanium anodizing racks that can be adjusted to accommodate many different types of parts: small items, rods, sheets, extrusions. Anodizing Rack Division, Service Screw Products Co., 131 N. Green St., Chicago 7, Ill.

64. Finishing Systems
Twelve pages of information on the company's finishing systems and components for finishing systems. Includes information on ovens, furnaces, air-supply systems, special mechanical handling systems, spray booths, dust collectors. Granco, Inc., 317 32nd St., S.W., Grand Rapids 8, Mich.

65. Zinc Plating Additive
Data on Zinc Brite, a cleansing and purifying agent for cyanide zinc plating solutions. Sulphur Products Co., Inc., 621 W. Pittsburgh St., Greensburg, Pa.

66. Selenium Rectifiers
Data sheets describe Syntron vacuum-process selenium rectifiers, include information on advantages, construction features, typical applications, specifications, efficiency. Syntron Co., 452 Lexington Ave., Homer City, Pa.

67. Infrared Ovens
Information on Patent-Flex infrared heating panels and ovens. Wil-Son Mfg. Co., Dept. PF, Cloverport, Ky.

68. Abrasive Powders
Information on a hard abrasive available in fine particle sizes for use in polishing. Barton Mines Corporation, North Creek, Warren County, N. Y.

69. Polishing and Buffing Compositions
Information on Buckingham buffing and polishing compositions. The Buckingham Products Co., 14100 Fullerton Ave., Detroit 27, Mich.

70. Filters for Compressed Air
Bulletin GEO-507. Four pages of information on various types and sizes of filters for compressed air and other gases. Includes technical information and charts on flow characteristics, physical dimensions, and metals of which the filters are made. Commercial Filters Corporation, 2 Main St., Melrose, Mass.

71. Barrel Plating Equipment
A 46-page catalog on barrel plating, cleaning and rinsing equipment and accessories. Crown Rheostat & Supply Co., 3465 N. Kimball Ave., Chicago 18, Ill.

72. Lubricant for Conveyors
Form No. 6-206. Four pages of data on Dow Corning 41 grease, a silicone formulation that performs well at high temperatures such as encountered by conveyor trolleys in baking ovens. Dow Corning Corporation, Midland, Mich.

73. Spray-Mask Painting Machine
Information on a spray-mask painting and mask-washing machine that requires no spray booth, is useful for painting small parts in as many as three colors. Dumatic Devices, Inc., 22833 Dequindre, Hazel Park, Mich.

74. Felt Polishing Products
A 12-page booklet describes felt wheels, tells about typical applications; has table to aid in selection of felt wheels; table of specifications; directions for setting up and caring for felt wheels; maintenance "do's" and "don'ts"; other useful data. Bacon Felt Co., 447 W. Water St., Taunton, Massachusetts.

75. Chromate Conversion Coatings
Handy reference file on Iridite chromate conversion coatings. Allied Research Products, Inc., 4004-06 E. Monument St., Baltimore 5, Maryland.

76. Clear Semi-Gloss Lacquer
Information on Agateen No. 2B semi-gloss lacquer. Agate Lacquer Mfg. Co., Inc., 11-13 43rd Rd., Long Island City, New York.

77. Weather Testing Service
Data sheet describes company's scope and activities, facilities, special services. South Florida Test Service, 4301 N.W. Seventh St., Miami 44, Florida.

78. Clean Plating Solutions
Catalog describes Alsop filtration units for removing impurities from plating solutions. Alsop Engineering Corp., 1401 Keen St., Milldale, Conn.

79. Cut Anode Waste
Information on reducing waste of costly anodes by purifying plating baths with activated carbon so as to reduce rejects. Chemicals Div., Atlas Powder Co., Wilmington 99, Del.

80. Phosphate Coating for Steel
Four-page brochure describes various phosphate coatings on steel, which bond the paint and protect the metal from underfilm corrosion. Includes handy selection chart. Amchem Products, Inc., Ambler 14, Pa.

81. Plating Racks
Illustrated bulletin on Thinker Boy plating racks, which are made of stock insulated parts that assemble with a leakproof seal. Belke Manufacturing Co., 947 N. Cicero Ave., Chicago 51, Ill.

82. Paint Stripper
Brochure gives complete details on Epoxystrip, a paint stripper formulated to remove tough finishes easily. Beck Equipment Co., 3350 W. 137th St., Cleveland 11, Ohio.

83. Tack Cloth
Literature on treated cloths that pick up dust and lint prior to paint finishing. Bond Chemical Products Co., 2639 N. Clybourn Ave., Chicago 14, Ill.

84. Corrosion-Resistant Coatings
Booklet entitled "What Every Maintenance Man Should Know About Urethane Coatings" describes characteristics of these plastic coatings: resistance to corrosive chemicals and fumes; resistance to abrasion, heat, sunlight, weather. Better Finishes & Coatings, Inc., 268 Doremus Ave., Newark 5, N. J.

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85. Drying Ovens
Information on gas-fired recirculating ovens in many types and sizes. The Carl Mayer Corp., 20800 Center Ridge Rd., Cleveland 16, Ohio.

86. Aluminum Etchant
Technical data sheet on Cowles AK tells how this formulation works on all aluminum alloys, prevents build-up of scale by means of a special sequestering agent. Cowles Chemical Co., 7016 Euclid Ave., Cleveland 3, Ohio.

87. Rhodium Plating Instructions
Handy pocket-sized booklet gives complete instructions for rhodium plating, includes data on solution preparation, work preparation, temperatures and current densities, tanks, anodes, and so on. Sigmund Cohn Mfg. Co., Inc., 121 S. Columbus Ave., Mount Vernon, N. Y.

88. Panel Heaters
Data Bulletin 258 describes the Thermo-Panel Coil, a heat exchanger that is formed by welding two embossed sheets together to form flow channels. Dean Thermo-Panel Coil Div., Dean Products, Inc., 622 Franklin Ave., Brooklyn 38, New York.

89. Modular Electrostatic Spray
Bulletin describes modular electrostatic spray systems, self-contained packages that include all the equipment and accessories necessary to apply paint by electrostatic spraying. Binks Manufacturing Co., 3118-40 Carroll Ave., Chicago 12, Illinois.

90. Degreasing Solvent
Information on Blacosolv degreasing solvent. Dept. 104-D, G. S. Blakeslee & Co., 1844 S. Laramie Ave., Chicago 50, Illinois.

91. Anodized Aluminum Nameplates
Four-page bulletin No. 177 describes adhesive-backed anodized aluminum nameplates. W. H. Brady Co., 746 W. Glendale Ave., Milwaukee 9, Wis.

92. Cleaning and Finishing Machinery
A two-page bulletin describes machines, systems and processes for cleaning and finishing metal products. Cincinnati Cleaning & Finishing Machinery Co., 2008 Hageman St., Cincinnati 41, Ohio.

93. Fans
Bulletin DB 45-58 catalogs a complete line of air-moving equipment, including units specially designed for exhausting corrosive fumes. DeBothezat Fans Div., American Machine & Metals, Inc., East Moline, Ill.

94. Spray-Gun Motion Study
An analysis of spray-gun techniques that will aid the user in obtaining the best quality sprayed finish with less fatigue and at minimum cost. The DeVilbiss Co., Toledo 1, Ohio.

95. Bronze Powders
Color card shows 33 colors of bronze-like finishes that can be produced from stock Cres-Lite bronze powders. Crescent Bronze Powder Co., 118 W. Illinois St., Chicago 10, Ill.

96. Drying and Baking Booklet
Data Booklet D117 shows how heating units and ovens of all sizes and shapes can be built at low cost from prefabricated interlocking infrared sections. Dry Clime Lamp Corp., Greensburg, Indiana.

97. Spray Painting Equipment
Folder shows complete line of spray-painting equipment, reviews and introduces many newly developed products. Eclipse Air Brush Co., 391 Park Ave., Newark 7, N. J.

98. Electropolishing Stainless Steel
Literature on baths for electropolishing stainless steel includes operating instructions for two of these baths. Electro-Glo Co., 621 S. Kolmar Ave., Chicago 24, Ill.

99. Prepare Aluminum for Plating
Literature on Alumon, a process that can be used to prepare aluminum for electroplating. Enthone, Inc., 442 Elm St., New Haven 11, Conn.

100. Sisal Buffs
Descriptive literature on Zippo Sisal Buffs, which are said to be excellent as dual-purpose (polishing and buffing) wheels. Formax Mfg. Corp., Detroit 7, Mich.

101. Prevent Wear on Buffing Fixtures
General information folder describes company's service of coating buffing fixtures with a protective coating that increases wear resistance. Fusion Metal Coating Co., 25493 W. Eight Mile Rd., Detroit 19, Mich.

102. Roller Coating Equipment
Information on Gasway equipment for roller coat finishing. Gasway Corporation, 6463 N. Ravenswood Ave., Chicago, Illinois.

103. Belt Grinder
Bulletin 336-T describes and illustrates Model UBG-50 universal belt grinder, a machine with two heads—one for internal and flexible-belt grinding, one for contact wheel, flexible-belt, platen and contour-wheel grinding. Hammond Machinery Builders, Inc., 1622 Douglas Ave., Kalamazoo, Mich.

104. Water Wash Spray Booth Compound
Information on Diff. LX Klarifiant, a spray booth compound that is said to prevent clogged nozzles, booth rusting, foam, and curtain "build-up." DuBois Co., Inc., 1120 W. Front St., Cincinnati 3, Ohio.

105. Bright Copper
Data sheet describes Cynorex high-speed copper cyanide plating process and Cuprex acid copper plating process, tells about advantages of each. Harshaw Chemical Co., 1945 E. 97th St., Cleveland 6, Ohio.

106. Plating Course
Information on a correspondence course in electroplating. Joseph B. Kushner Electroplating School, 2509 Washington Ave., Evansville 14, Indiana.

107. Baking and Drying Equipment
Catalog No. 560 describes and illustrates various types of baking and drying equipment. The Lanly Co., 2800 Euclid Ave., Cleveland 15, Ohio.

108. Tack Cloth
Information on specially treated cloths that are used for removing dust and lint just prior to paint finishing operations. Mard Products, Inc., 1020 E. Ten Mile Rd., Hazel Park, Mich.

109. Lead Anodes
Descriptive bulletins on various types and sizes of lead anodes. Heil Process Equipment Corp., 12901 Elmwood Ave., Cleveland 11, Ohio.

110. Tumbling Barrels
Catalog describes and illustrates a complete line of tumbling barrels. Henderson Brothers Company, 138 S. Leonard St., Waterbury, Conn.

111. Used Polishing Equipment
Information on used buffing and polishing machines. J. Holland & Sons, Inc., 485 Keap St., Brooklyn 11, N. Y.

112. Degreasing Solvents
Information on Nialk trichlorethylene degreasing solvent. Hooker Chemical Corp., 1406 Union St., Niagara Falls, N. Y.

113. Cyanide Copper Plating Process
Data on Ro-Bright, a bright cyanide copper plating process said to produce deposits with excellent brightness in a minimum time. R. O. Hull & Co., Inc., 1304 Parsons Ct., Rocky River 16, Ohio.

114. Finishing Systems
Bulletin shows typical integrated complete systems for applying organic coatings. Includes description of products being coated, the process used and specifications for the system. Michigan Oven Co., 431 Brainard Ave., Detroit 1, Mich.

115. Pearlescent Finishes
Information on Nacromer YNC, an additive that is used in standard organic finishes to produce a pearlescent finish. The Mearl Corporation, 124 E. 40th St., New York 16, N. Y.

116. Degreasers
Catalog describes laboratory, two-dip, three-dip, vapor-spray, barrel-type automatic, and semi-automatic degreasers. Mechanical Process Co., Inc., 392 Valley St., South Orange, N. J.

117. Alkaline Tin Plating
Manual gives complete operating instructions for tin plating from the high-speed potassium stannate bath as well as recommended practice for plating from the sodium stannate bath. Includes basic data on alkaline tin plating, complete details on solutions and materials, operating conditions, anodes, analytical methods. Metal & Thermit Corp., Rahway, N. J.

118. Metal Preparation Products
Literature describes products for cleaning, rust removal, phosphatizing, conversion coating and cold forming. Neilson Chemical Co., 2302 Gainsboro, Detroit 20, Ferndale, Mich.

119. Centrifugal Dryer
Four-page folder gives complete details on the Model 20 New Holland Kreider centrifugal dryer. New Holland Machine Co., Dept. PF, New Holland, Pa.

120. Aluminum Cleaner
Complete details on Alkalume AC No. 1, a recently introduced cleaner formulated for cleaning aluminum prior to plating, anodizing, etching. Northwest Chemical Co., 9310 Roselawn, Detroit 4, Mich.

121. Printed Circuits
Information on silk screens and ink for making printed circuits. Naz-Dar Co., 461 Milwaukee Ave., Chicago 10, Ill.

122. Paint Mixer
Data sheet on Miracle paint rejuvenators, which mix paint without removing the lid from the container, by shaking the can vigorously. Miracle Paint Rejuvenator Co., 500 N. Robert St., St. Paul 1, Minnesota.

123. Phosphatizing Compound
Folder describes Oakite Cryscoat No. 89, a conversion coating for use in spray washing machines or tanks. This material converts the surface of steel parts into a hard, dense phosphate coating that weighs from 60 to 90 milligrams per square foot. Less paint is required than with heavier coatings, the manufacturer states, and paint does not chip as easily when this material is used as the paint base. Oakite Products, Inc., 20 Rector St., New York 6, N. Y.

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124. Wood Tank Handbook
Reference source on wood tanks describes uses of wood tanks, capacities, physical and chemical properties of wood and their relation to expected service of wood tanks, and so on. National Wood Tank Institute, 332 S. Michigan Ave., Chicago 4, Illinois.

125. Clear Lacquers
Data on clear lacquers especially formulated to be used in protecting highly polished metals and those that tarnish easily. Randolph Products Co., Carlstadt, New Jersey.

126. Finishing Systems
Information on systems for application of organic finishing materials on metal products. Ransohoff, Inc., 610 N. Fifth St., Hamilton, Ohio.

127. Self-Cleaning Pipeline Strainers
Features of Sarco pipeline strainers are described and illustrated in Bulletin No. 1210-B. Remove dirt, chips, scale, other solids from pipelines. Sarco Co., Inc., 635 Madison Ave., New York 22, New York.

128. Finishing Systems
Literature on Schmieg finishing equipment — spray booths, washers, ovens, other equipment used in painting. Schmieg Industries, Inc., P. O. Box 4701, Detroit 34, Mich.

129. Spray Nozzle Catalog
Catalog No. 24 is a 48-page booklet containing complete data on various spray nozzles and accessories. Nozzles are listed in tabular form and complete information is given on pipe sizes, external dimensions, orifice diameters, capacities and spray angles. Spraying Systems Co., 3229 Randolph St., Bellwood, Ill.

130. Etch Primer
Data on Gripalloy, an etch primer available in black and colors. Used as primer or finish coat. Tenax, Newark 5, N. J.

131. Soluble Precious Metals for Electroplating
Folder lists gold, rhodium, palladium, platinum, silver, and alloy precious metal plating solutions available from stock. Technic, Inc., Providence 1, R. I.

132. Brass Plating Solution
Technical bulletin on True Brite brass solution, which is available in a variety of colors. True Brite Chemical Products Co., Box 31, Oakville, Conn.

133. Cob Grits for Blasting, Tumbling
Information on corn cob grits that are used as tumbling media and in blast cleaning. Ti-Co Industries, Inc., P. O. Box 185, Tipton, Indiana.

134. Bright Silver Plating Process Instruction
Seven-page brochure contains technical instructions for the Sel-Rex Silvrex Bright Silver Process, includes data on bath make-up, purification of solution, solution maintenance, operating conditions. Sel-Rex Corp., Nutley 10, N. J.

135. Save Dirty Solvents
Data on the company's service of reclaiming dirty solvents. Solvents Recovery Service, Inc., 1025 Broad St., Newark 2, New Jersey.

136. Filter Pump Units
Bulletin 103 contains complete data on Sethco filter pumps for removing solids from acid and alkaline solutions. Sethco Mfg. Co., 2284 Babylon Turnpike, Merrick, L. I., N. Y.

137. Aerosol Finishes
Booklet entitled "Aerosols Unlimited" describes aerosol-packaged paints. Spray-on Products, Inc., 2077 E. 65th St., Cleveland 3, Ohio.

138. Coloring Compound
Information on Stevens 27L liquid tripoli coloring compound, which helps to produce high color, is easily cleaned off before finishing. Frederic B. Stevens, Inc., 1800 Eighteenth St., Detroit 16, Mich.

139. Liquid Buffing Compound
Data sheet points out the advantages of using Liquispray in cost savings and increased efficiency and quality. The Stutz Co., 4410 Carroll Ave., Chicago 24, Ill.

140. Safety Solvent
Four-page folder describes Turco-Solv, a detergent-action safety solvent which evaporates to complete dryness without leaving a residue. Requires no rinsing, is safe on all metals. Turco Products, Inc., 6135 S. Central Ave., Los Angeles 1, Calif.

141. Bright Cadmium
Technical Bulletin No. CDP-53 describes Bry-Cad, includes data on solution composition, brighteners, temperature, agitation, equipment, surface treatment and bright dipping, additions, and so on. Udylite Corp., Detroit 11, Mich.

142. Fabrics for Work Clothes
Different types of acid-resistant and lint-free apparel are listed in the 1958 Worklon Catalog, which describes and illustrates shirts, pants, coveralls and laboratory coats. Worklon, Inc., Dept. PF, 253 W. 28th St., New York 1, N. Y.

143. Copper Anodes
Information on "Phosphor-Brite" rolled copper anodes for acid copper plating baths. Univertical Foundry and Machine Co., 14841 Meyers Rd., Detroit 27, Mich.

144. Degreasing and Painting in One Machine

Technical report describes new process for cleaning and painting products in a single conveyorized machine. Includes cost comparisons, process details. E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Dept., Wilmington 98, Del.

145. Blast Cleaning

Literature on pressure blast wet blasting equipment tells how this process is useful in removing carbon, heat-treat scale, rust, excess solder, polishing compounds, many other dirts and undesirable deposits. Pressure Blast Mfg. Co., Inc., 33 Pleasant St., Manchester, Conn.

146. Electrostatic Painting Systems

A 74-page general engineering manual describes company's electrostatic painting systems. H. G. Fischer & Co., 9451-91 Belmont Ave., Franklin Park, Ill.

147. Hard-Coat Aluminum Anodizing Process

An improved process for hard-coat aluminum anodizing is described in a bulletin. Called the Porac process, it makes possible a more uniform aluminum oxide coating and substantially greater thickness of deposit, when desired. Accurate Anodizing Corp., 4506 Roosevelt Rd., Chicago 24, Ill.

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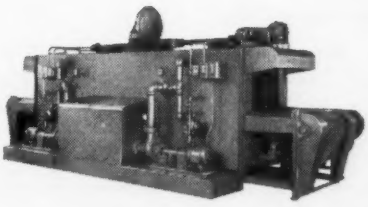

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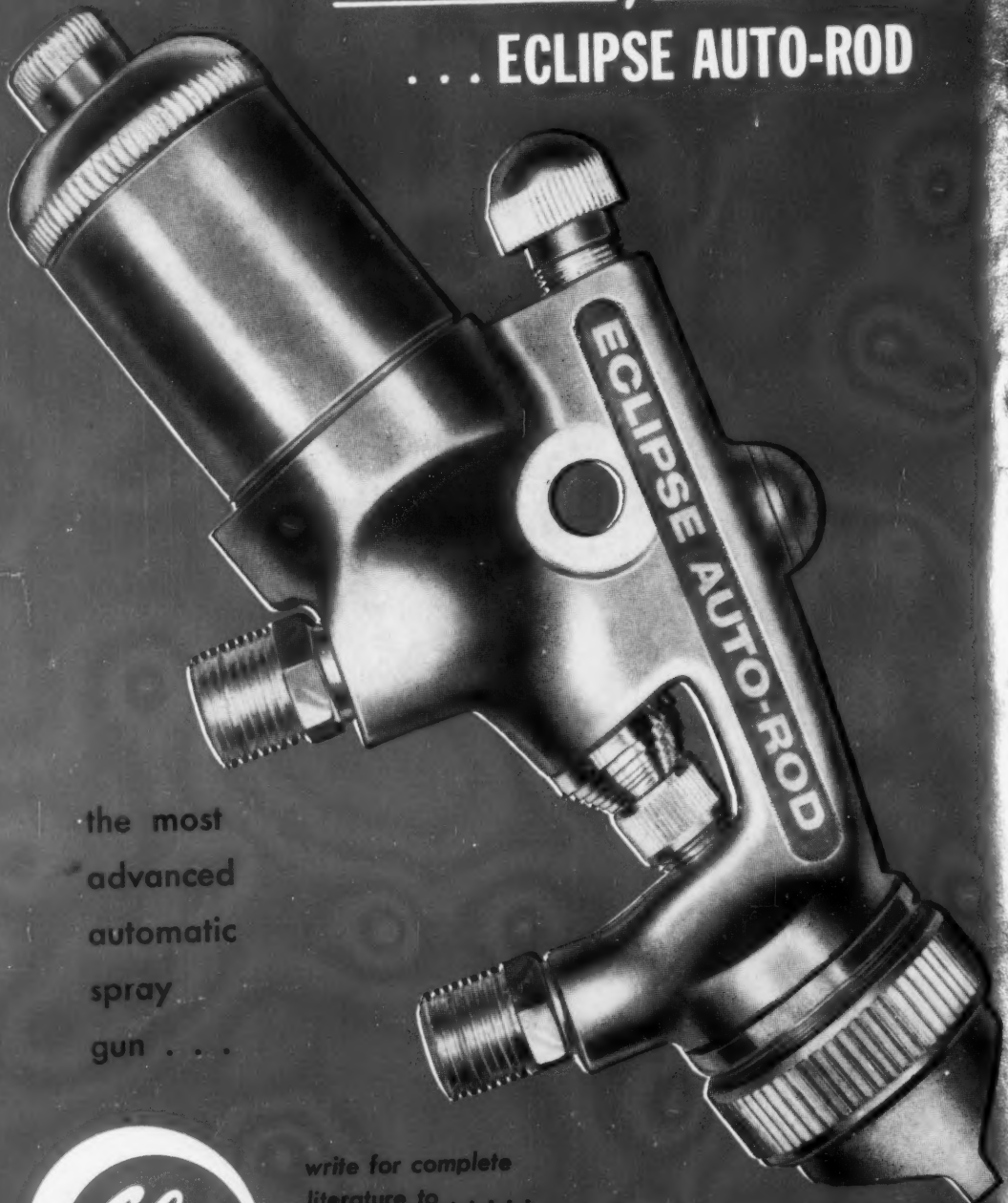

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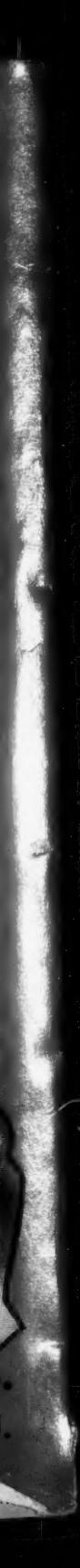
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